

*Instructions for Restoring the Ancient
Wisdom: A Primer of the Pythagorean
Practicum* ∞ NICK DRUMBOLIS

ABSTRACT IX: INTRODUCTORY SEMINAR

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MOST PEOPLE THINK the moon comes up every night. They think it rises like the sun in the east and sets in the west. They assume the interval between full moons is a month – or that the cycle, at least, takes 30 days.

But the moon proves to have the most complex mechanics of all conspicuous celestial bodies.

Man's attempt to comprehend its cycles persisted until Ernest W. Brown perfected his extraordinary formula for predicting the position of the moon, in 1919: an equation requiring *more than 1500 variables!* No one before that day truly understood the mechanics of lunar motion and very few people since then have even come close to comprehending it.

Our grasp of time changed. Chronometry, almanacs, ephemerides, calendars and festivals could finally be fixed with reliability. Or so it seemed:

In 1971 the Eid Festival was scheduled to begin as it must, on the night of waxing crescent – which thanks to Brown's equation, had been predicted in advance. But a delinquent sliver of the new moon somehow escaped from the underworld the night before the scheduled date, turning the celebration into a catastrophe. The custom previously had demanded actually *seeing* the crescent before proclaiming the start of the festival.

Yet while physicists and astronomers from Thales to Brown (615 BC – 1919 AD) had pondered the lunar puzzle for better than 2500 years, another deeper mystery about the moon survived Brown well into the 20th century – though few if any were even aware of it.

In April 1963, researching a book on the INTERNATIONAL GEOPHYSICAL YEAR (1957/8), Alexander Marshack read an article about an 8000-year-old African bone – the Ishango Bone, bearing scratches on its surface – and suddenly realized that the scratches approximated lunar phase counts. His exhaustive study of similar bones and stones from around the world, *The Roots of Civilization* (1972), brought the lingering mystery about the moon and its importance to antiquity, out of the depths of oblivion and into question for the first time in at least 2500 years.

Not only had ancient man apparently been counting the phases of the moon, he appeared, more importantly, to be preserving a record of his counts over extended intervals of time.

Marshack's discovery arguably pushed ancient man's attempts to unravel the mysteries of the moon back 30 or 40 thousand years! Yet when had the lunar databases of antiquity been abandoned? When had the tradition been disrupted?

In 1990 I began a morphemic trace through history – tracking the morpheme 'ver'. Letters make no sound. *Uttering* the letters invokes additional phonemes for all the letters of the alphabet but E.

Literature is exceptional as a mute, *reflective* means of communication – the author summoning insights in solitude which the reader digests in private – a community sustained in mind. The *letter* – epistolary root of *literature* – remains our most reliable form of space and time travel; just as the letters (not their sounds) remain our least corruptible means of recovering the past. Thus my focus on the morpheme – 'ver' on the page an efflorescence of 'bel'.

Examining phonemic mutations – Grimm's Shift, lambdaism, rhotacism, *etc* – I noticed that our alphabet had two distinct kinds of letter: round & angular. Long before I gave the name to my bookshop (1982) I'd mused over letters as the most potent coefficient of consciousness – our quintessential abstraction. Signs that make music in the eye.

I thought of the alphabet as a serial mnemonic; & shortly after discovering Marshack's work (while considering the *flattened* megalithic circles in Britain), suddenly realized what the rounded letters of the alphabet corresponded to: lunar phases assuming identical positions in the lunation to the corresponding letters in the alphabet.

I immediately began searching for corroborating evidence – earlier registrations of this parallel – with little luck. A few others had noted the similarity between the letter C and the crescent, or O and full moon (one even going so far as to record that the abominable letter S appeared to be composed of conjoined crescents), yet no one, it seemed,

had anticipated my realization that the alphabet appears to have been conceived originally as a mnemonic of lunation.

David Diringer wrote *the* book on the Alphabet (1948; 1968). All alphabets are adaptations of the original. Yet the original was not something anyone could establish with certitude.

It seemed to me that the progression from a system of 600–700 hieroglyphs or pictograms (ideographic script); or from one with 60 syllabics (phonemic script); to another involving some 30 phonetic components (alphabetic script) invited greater rather than less complication. An added level of abstraction was required to decipher text: identify sounds, combine sounds, identify words, relate words to things. Syllabic script, in contrast, developed from biliteral vocabularies, where syllables themselves had meaning, often representing things or concepts.

My first intention was simply to get feedback from those who knew more about these subjects than I did, but no one seemed either interested or informed enough to comment. Gradually I discovered further convergences which led me to conclude that the entire basis for ancient thought was evidently lunar.

Robert Graves had investigated texts identifiable as lunar myths in *The White Goddess* (1948) but failed to recognize the importance of lunar mechanics to the ancient conceptions. His work developed in the heyday of psychoanalysis when the meaning of myth was widely assumed to be psychological. Authorities ultimately came to insist that their significance was largely in your head – that myths, in fact, were preternaturally open to interpretation.

Freud posited that men want to sleep with their mothers (in his attempt to explain the Oedipus myth); Jung claimed that myth was the Conscious mind's attempt to understand the Unconscious (his Archetype); and spiritualists who couldn't comprehend the Biblical fables, contended that religion was god's voice in a faithful core (Satan's voice having been relegated to the unfaithful cortex).

Why *did* our forefathers write such things? This was the question that Thales and his generation of empirical sceptics

raised late in the seventh century B.C. The legacy of myths and hero stories which they'd inherited – especially those about the divine origin of the universe – were not only incomprehensible to them, they were decidedly embarrassing! 'How might *we* have descended from grown men who believed such childish things?'

Thus began the philosophers' attempts to describe and explain nature – and ultimately, the nature of thought itself (relegating the natural philosophers to a separate discipline as physicists). They were driven to redefine their world because the received wisdom made so little sense to them (*cf.* Herodotus *et al.*).

Which points to the widely-held presumption that something had occurred to disrupt the continuity of intellectual traditions and allow the generation of Thales to misplace the meaning of inherited myth – a breach (or "a bowl that went smash" as Charles Olson put it, referring to the ornament of the Heroic Age).

Yet an abundance of arcane elaboration remained – especially in Egypt – to whet the wonder of the more inquisitive intellects. The Heliopolitan priests had informed Solon that the Greeks were far older than the Egyptians but had lost their knowledge of the past – *becoming dumb* – when literacy was mysteriously obliterated. Which seemed to indicate some sort of cataclysm.

Thus the lunar origin of the alphabet and lunar significance of the ancient myths were systematically obscured beneath scientific interpretation – logical, physical, astronomical, even linguistic (not to mention psychological). But since Marshack's discovery, intimations of an older methodology have become discernible again.

At the core of the restoration of ancient wisdom lies an understanding of ancient cosmology. The world was conceived as a round (but flat) territory sandwiched between divergent streams of Heaven (sweet water) and the Underworld (salt). The realm of the gods was in the sky above; the realm of the goddess, underground, deep in the earth (the subterranean cavity of the earth-mother goddess – the cave – the divine source of earthly plenitude).

Disparate gods – such as Enlil and Enki, the Sumerian air and water gods – initially describe rulers over the divergent streams: Enlil Lord of the rainy tributary of Okeanos; Enki Lord of its salty confluence.

Gradually the gods became identified with the dominant phases of the lunation: all phases of an arc accumulating in the spectre of full moon – two of which rose each lunation – Amon Lord of the Waxing Arc; Ra Lord of the Waning.

The seven focal gods of the lunation – waxing crescent, waxing half-moon, twin full moons, first waning phase, waning half-moon and waning crescent (all other phases of the lunation remaining indistinguishable) – were replaced by Akhenaton with the symbol of complete lunation (the Aten); and by the Children of Israël with the theophany of an intercalary day (YHWH). Thus Monotheism.

There are two dark nights every lunation, during which no lunar spectre appears in the sky. Ancient man believed that the moon had been abducted by a serpent residing in the underworld and impregnated to beget the new lunation (before being devoured) – the serpent representing the *course* of the moon slithering through its cycle.

The question remained: *What is the goddess trying to tell us by showing a different face every night, then vanishing for two terrifying nights?*

Later enclaves of the lunar priesthood refined the explanation, maintaining that it was in fact, the phallus-like waning crescent which had descended into the underworld to fertilize the goddess and reproduce the cycle – the seven focal spectres of the lunation having been reverently transformed by then, into distinct gods presiding over their own proprietary stations in the sacred cycle.

SIGN | SYMBOL | MYTH

	NORTH-SEMITIC				GREEK				ETRUSCAN		LATIN		MODERN CAPS.			
	Early Phoenician	Early Hebrew (conjectured)	Mosaic	Phoenician	Early	Eastern	Western	Classical	Early	Classical	Early	Early Monumental	Classical	Gothic	Italic	Roman
1	K ⁽¹⁾	𐤀 ⁽¹⁾	𐤁 ⁽¹⁾	𐤂 ⁽¹⁾	Α	Α	Α	Α	𐌁	Α	Α	𐌁	Α	Α	Α	Α
2	G	𐤃	𐤄	𐤅	Β	Β	Β	Β	𐌂	Β	Α	Β	Β	Α	Β	Β
3	Γ ⁽²⁾	𐤆 ⁽²⁾	𐤇 ⁽²⁾	𐤈 ⁽²⁾	Γ ⁽²⁾	Γ ⁽²⁾	Γ ⁽²⁾	Γ ⁽²⁾	𐌃	𐌘 ⁽²⁾	𐌘 ⁽²⁾	𐌘 ⁽³⁾	𐌘 ⁽³⁾	Β	Β	Β
4	Δ	𐤉	𐤊	𐤋	Δ	Δ	Δ	Δ	𐌄	𐌙	𐌙	𐌙	𐌙	Γ	Γ	Γ
5	Ξ ⁽⁴⁾	𐤌 ⁽⁴⁾	𐤍 ⁽⁴⁾	𐤎 ⁽⁴⁾	Ξ	Ξ	Ξ	Ξ	𐌅	𐌚	𐌚	𐌚	𐌚	Δ	Δ	Δ
6	Υ ⁽⁵⁾	𐤏 ⁽⁵⁾	𐤐 ⁽⁵⁾	𐤑 ⁽⁵⁾	Υ	(see letter U)			𐌆	𐌛	𐌛	𐌛	𐌛	Ε	Ε	Ε
7	(see letter C)												𐌜	Ϝ	Ϝ	Ϝ
8	Ι ⁽⁶⁾	𐤒 ⁽⁶⁾	𐤓 ⁽⁶⁾	𐤔 ⁽⁶⁾	Ι	Ι	Ι	Ι	𐌇	𐌟 ⁽⁶⁾	𐌟 ⁽⁶⁾	𐌟	𐌟	Η	Η	Η
9	Θ ⁽⁷⁾	𐤕 ⁽⁷⁾	𐤖 ⁽⁷⁾	𐤗 ⁽⁷⁾	Θ	Θ	Θ	Θ	𐌈	𐌠 ⁽⁸⁾	𐌠 ⁽⁸⁾	𐌠	𐌠	Θ	Θ	Θ
10	Λ ⁽⁹⁾	𐤘 ⁽⁹⁾	𐤙 ⁽⁹⁾	𐤚 ⁽⁹⁾	Λ	Λ	Λ	Λ	𐌉	𐌡	𐌡	𐌡	𐌡	Ι	Ι	Ι
	(see letter I)													Ι	Ι	Ι
11	↓	𐤛	𐤜	𐤝	↓	Κ	Κ	Κ	𐌊	𐌢	𐌢	𐌢	𐌢	Κ	Κ	Κ
12	Λ	𐤞	𐤟	𐤠	Λ	Λ	Λ	Λ	𐌋	𐌣	𐌣	𐌣	𐌣	Λ	Λ	Λ
13	Σ	𐤡	𐤢	𐤣	Σ	Σ	Σ	Σ	𐌌	𐌤	𐌤	𐌤	𐌤	Σ	Σ	Σ
14	Υ	𐤥	𐤦	𐤧	Υ	Υ	Υ	Υ	𐌍	𐌥	𐌥	𐌥	𐌥	Υ	Υ	Υ
15	Φ ⁽¹⁰⁾	𐤨 ⁽¹⁰⁾	𐤩 ⁽¹⁰⁾	𐤪 ⁽¹⁰⁾	Φ	Φ	Φ	Φ	𐌎	𐌦 ⁽¹⁰⁾	𐌦 ⁽¹⁰⁾	𐌦	𐌦	Φ	Φ	Φ
16	Ω	𐤫	𐤬	𐤭	Ω	Ω	Ω	Ω	𐌏	𐌧 ⁽¹⁰⁾	𐌧 ⁽¹⁰⁾	𐌧	𐌧	Ω	Ω	Ω
17	Ξ ⁽¹³⁾	𐤮 ⁽¹³⁾	𐤯 ⁽¹³⁾	𐤰 ⁽¹³⁾	Ξ	Ξ	Ξ	Ξ	𐌐	𐌨 ⁽¹⁰⁾	𐌨 ⁽¹⁰⁾	𐌨	𐌨	Ξ	Ξ	Ξ
18	Υ	𐤱	𐤲	𐤳	Υ	Υ	Υ	Υ	𐌑	𐌩	𐌩	𐌩	𐌩	Υ	Υ	Υ
19	W ⁽¹⁴⁾	𐤴 ⁽¹⁴⁾	𐤵 ⁽¹⁴⁾	𐤶 ⁽¹⁴⁾	W	W	W	W	𐌒	𐌪	𐌪	𐌪	𐌪	W	W	W
20	+	𐤷	𐤸	𐤹	+	+	+	+	𐌓	𐌫	𐌫	𐌫	𐌫	+	+	+
21	(1) =	(10) = s														
22	(2) = g	(11) = ks														
23	(3) = k	(12) =														
24	(4) = h	(13) =														
25	(5) = w	(14) =														
26	(6) = z	(15) = kh														
	(7) = t	(16) = ph														
	(8) = th	(17) = ps														
	(9) = y	(18) =														
					(16)	(17)	(18)	(15)		𐌬 𐌭 𐌮			𐌮			
					Φ	Ψ	Ω	Υ								

FIG I CONJECTURED EARLY ALPHABETS
[DIRINGER, *The Alphabet* VOLUME II, p373]

SEVERAL YEARS AGO I discovered something startling about the moon which appears to have eluded scholars from at least the Classical Age through to the present.

The alphabet proves to be a serial mnemonic of lunation. The lunar cycle which is known as the lunation – the interval between successive appearances of the same lunar phase [there *are* other lunar cycles] – is comprised, on average, of:

- i two dark nights during which no spectre appears in the sky (nights 1 & 2)
- ii WAXING CRESCENT (night 3)
- iii 5 further concave spectres in the concave quarter of the waxing arc (4–8)
- iv WAXING HALF-MOON (9)
- v 5 convex spectres in the convex quarter of the waxing arc (10–14)
- vi TWO FULL MOONS (15 & 16)
- vii FIRST WANING PHASE (17)
- viii 5 further convex spectres in the convex quarter of the waning arc (18–22)
- ix WANING HALF-MOON (23)
- x 5 preliminary concave spectres in the concave quarter of the waning arc (24–28)
- xi WANING CRESCENT (29)

Which accumulates a mean total of 29 phases (the average lunation presently computed at 29.530588 days or 29 days 12 hours 44 minutes and 3 seconds).

Alphabets derived from the original alphabet share unrecognized features with the lunation:

[>] The first letter (*alpha* or *aleph*) – written on its side in the earliest inscriptions – arguably presents the image of a sighting vertex (not unlike a telescope). If the cross-stroke through this vertex is read as a cancel, the figure accords with the absence of a lunar spectre in the sky on the first night of the lunation (*ie*, nothing visible).

- [B] The second letter (*beta* or *beth*) presents a doubled sighting vertex, with the cancel stroke again signifying 'nothing visible on the second night of the lunation'.
- [C] The third letter (*gamma* or *gimel*) describes the waxing crescent, the first visible phase in the lunation, which appears on the third night – I use *our* third letter C to emphasize the conjunction.
- [Θ] The eighth letter (*theta* or *teth*) presents the image of a halved circle; the half-moon making its appearance on the ninth night of the lunation.
- [O] The fifteenth letter (*omicron* or *ayin*) accords with the occurrence of the first full moon on the fifteenth night of the lunation.
- [Π] The sixteenth letter (*pi* or *pe*) presents a figurative extrapolation of the second full moon: the diameter employed as a tangent (on four sides) to 'square the circle'. The need for a separate character to distinguish between the two different full moons becomes apparent when keeping a record of elapsed phases in a blank calendar grid. (Further bearing on the 'coincidence' that *pi* is yet employed as the symbol of the relation of diameter to circumference...)
- [Q] Our seventeenth letter (initially *qoph* or *kaph*) depicts the full moon with a tail or descender, signifying the start of the waning or descending arc of the lunation, which occurs on night seventeen.
- [X] The twenty-second letter (*chi*) presents an image of crossed diameters, reflecting the waning half-moon on night twenty-three (whose diameter leans to the left [⊗], perpendicular to the angle of the diameter of the waxing half-moon inclined to the right: ⊙).

A series of possible convergences which led to the realization that only seven phases in the lunation are recognizable on observation: opposing crescents; opposed half-moons; twin full moons; and first waning phase. All other visible spectres remain indistinguishable on sight.

Six of these seven identifiable spectres appear in the list of convergent letters above (while the two other phases, the

moonless nights – which, failing to present as spectres, may pose as a-spectres – likewise prove identifiable on sight).

Proceeding to investigate the complexities of lunar mechanics and the origin of the alphabet, I gradually came to suspect that these nine focal lunar phases (including the two dark nights) might further be what the focal deities of the various ancient cultures represented (eg, the Egyptian *Ennead* or *Paut*); a fresh cosmological explanation of the mythical elaborations of ancient belief. Others, such as Robert Graves, had tabulated lunar references from myth before, but failed (with regard to my discovery), to recognize sufficiently the importance of lunar mechanics to ancient iconography.

Pseudo-historical hypotheses erupt from the recognition that myth obscures more than it explains about ancient cultures. But myth interpreted in the fresh light of lunar mechanics, generates cascading clarifications.

A straightforward *natural* reference: lunar cycle. But one requiring a grasp of the complexities (which, as it turns out, even astronomers largely fail to appreciate).

Waxing crescent, for instance, makes its first appearance high in the western sky – the cycle progressing counter-intuitively from west to east (waning crescent ultimately disappearing in the east).

The Course Cycle of the moon (where it rises each night) snakes along the horizon in declinations from 29° north latitude to 29° south, 19° north, then 19° south, before returning to its original position – a cycle recurring every 230 lunations (18.6 years). The fraction of a year drove adherents of this cycle to project a 56-year Course Round ($3 \times 18.6 = 55.8$), to correlate course observations more nearly with the solar cycle.

The Phase Cycle of the moon – recurrence of the same phase on the same solar date of the year (eg, full moon at summer solstice) – requires 235 lunations or 19 years.

While the interval between two successive focal phases (eg, waxing crescent and half-moon) may vary by as much as 36 hours, or a day and a half, from lunation to lunation.

Which obviously presents a problem in computation when trying to construct a mean lunar schematic. [cf, p47]

An historical précis might go something like this:

Conflicts between Sumerian 'city-states' resulted primarily from competing calendars (giving rise to three distinct measures informing the Sumerian Kinglist, two of which require calibration to be digested properly). The Akkadian dynasty introduced further calendrical expansions observed throughout their empire – the 70-year solar great-year, the 56-year nodal regression round, and the 25-year lunar great-year measures – which were ultimately perpetuated in Egypt following the eclipse of Akkadian rule.

Centuries later, a deviant faction of the lunar priesthood – characterized by the Hyksos – challenged the complexity of the Egyptian constructs, with the first discrete lunisolar measure: a streamlined calendar comprised of variable months, relinquishing the need for long-range adjustment. Ultimately expelled from the Delta, they introduced their revolutionary expedient into Canaan, Anatolia, the islands and Greece.

The old calendar had fixed months of 30 days, twelve of which comprised a year of 360 days, at the end of which 5 intercalary days had to be added. The 25-year lunar and 70-year solar (as well as two other much longer) great-year measures were maintained alongside the annual measure to permit various adjustments of the computational intervals when calendar dates lagged too far behind the natural cycles. [see pp48/9]

The new calendar had alternating months of 29 and 30 days, with years of varying lengths, the measure extending through 99 months embracing 8 years, completed with the addition of a single intercalary day. (An earlier form of the 8-year variable-month calendar comprising 100 months had to be scrapped after 128 years as deficient.) [see p50]

The Bible codifies an account of the superiority of this Chosen Measure over the Egyptian and Babylonian antecedents (while further dramatizing the pre-eminence of the 99-month variant of the 8-year calendar over its defective 100-month predecessor). [see p65]

The Trojan War epitomizes the conflict between the 99-month and 100-month variants of the 8-year calendar (Troy adhering fatally to the deficient measure). [see p62]

Both accounts are allegories of the competing measures, cryptically composed by diverse but related factions of the lunar priesthood, valorizing numeracy above literacy – the letters conveying, but the numbers comprising, the story.

Thus the title of my study, *Myth as Math*, reviewing large numbers in the Bible and the myths, as computations of lunar frequency. It is *not* a numerological hypothesis, but one rigorously predicated on mathematical operation; the narratives having been interpreted through the *implicit* mathematics of calendrical measures.

I propose that numbers in myth invite mathematical operation – addition, subtraction, multiplication, division – with results sought, which accord with calendrical measure. (Proceeding on the assumption that the narratives retail calendrical accounts, knowledge of the various measures supplies the crucial key to the insights they arguably conceal.)

Lending to a refinement of my hypothesis: *Given the apparent convergence of letters of the alphabet with lunar phases, does the mathematical operation on large numbers in ancient scripture support the suspicion that myth likewise retains at its base the antecedent of lunar cycle?*

An exercise requiring sustained discrimination of the conceptual distinctions between 'lunation' and 'month' – involving mathematical rationalization of the natural lunar cycle and its calendrical expedients (bearing in mind that the full complexities of lunar mechanics eluded mastery until 1919).

The discovery has excited a torrent of arresting insights – in five volumes – including the speculation that the seven stars (*shadowed* by the 'seven sisters') not only refer to the seven focal spectres of the lunation – opposing crescents, opposed half-moons, twin full moons & first waning phase (each 'married' on its corresponding *daytime* to an aspect of the goddess in her domain of the underworld) – but also represent the pivotal deities of mythology: Horus (Ares)

waxing crescent; Thoth (Hermes) waxing half-moon; Amon (Apollo) first full moon; Ra (Zeus) second full moon; Set (Poseidon) inaugural waning phase; Ptah (Hephæstus) waning half-moon; Osiris (Hades/Pluto) waning crescent. The two dark nights fall to Isis and her twin Nephthys (or in the Greek, Artemis, who also manifests as a notable twin – Apollo's) emphasizing the conception of 'twin dark nights' complementing the 'two full moons' at the diametrical pole of the lunation – opposed *stations* both disposed to twins.

Improbable and unorthodox as it may at first appear, this speculation is amply supported on reconsidering the myths with the respective *lunar attributes of the gods* imported. To give one example, the *Riddle of the Sphinx*: "What is it that goes on four legs in the morning, on two at midday, and on three in the evening?" [APOLLODORUS III.V.8] History rests on the explanation that Œdipus banished the Sphinx by guessing that she referred to Man, who crawls in his youth, walks upright when grown & on a cane in old age. Yet as a lunar allegory, the temporal clue in this explicit solution may be expanded to a more insightful exposition.

Figuring the length of the lunation at $29\frac{1}{2}$ days invites the projection of 59 half-days ($29\frac{1}{2} \times 2$). The two dark nights thus comprise 4 half-days (walking on all-fours). The 26 spectres from 'waxing crescent on the third night' to 'the phase visible on the night before waning crescent' project 52 half-days (each spectre advancing through two 'legs', daytime and nighttime; the two legs at *midday* further conjuring the twin full moons at the apex or *midpoint* of lunation: nights 15 and 16, which leaves 12 on either side). The phase of the waning crescent, then, will extend 3 half-days in our model of a standardized $29\frac{1}{2}$ -day lunation, to complete the cycle (an *old man* – the final phase – on his cane): $4 + 52 + 3 = 59$. The correct answer to the riddle wasn't in fact, Man, but Moon...

In a calendar comprised of alternating 29-day and 30-day months – like that employed by both Greeks & Hebrews – Œdipus (*oldman* 'swell-foot') would inimitably personify the variable month: completing his journey in 29 days the first month & the same journey the next in thirty (a swollen

measure). The myth, like many other Greek myths, preserves the distinction between a new 'heretical' calendrical measure employing the variable month, and the entrenched calendar of Mesopotamia and Egypt projecting a year of twelve idealized 30-day months (completed with 5 annual intercalary days in Egypt, or an additional 30-day month every six years in Mesopotamia).

This is also the reason for the alternate cognomen of Hades – theophany of waning crescent – Pluto (meaning "wealthy"; *ie*, richer by an extra measure) accommodating the final phase of the longer female month of thirty days: the extra half-day conceived as an invariable addition at the end of the cycle (*ie*, to the terminal phase).

Osiris, consequently, is 'killed' twice by Set – once for the 29-day month & again for the 30-day month – the 14 pieces into which he dismembers the body, delimiting the interval of the waning arc of the 30-day cycle: day 17 (first waning phase, Set's day) through day 30 (last waning phase, that of Osiris) comprising 14 days – his 'missing' penis an effective subtraction for the male or 29-day month. Set 'kills' him merely by inaugurating the waning arc of the cycle, which precipitates the *downfall* of all waning (or Setting) phases.

Osiris – terminal form of Set – descends into the underworld where he *mates* with Isis during the two dark nights (crescent as *phallus*) begetting his heir, Horus, *avenging* spectre of the succeeding lunation (crescent as *blade*).

Submergence which further accounts for the *blindness* of Œdipus after copulating with his mother (the *darkness* of underworld) – the goddess giving birth to the lunation she will ultimately couple with. The killing of his father, accordingly, inters the spent lunation as predecessor.

The Classical fuss over sungods appears to have obviated the possibility that more-ancient texts and traditions might in actuality allude to the fluctuations in lunar brilliance (the "brightness" of *arge*, for example – as in 'Argo' & 'Argos' – relinquishing a signal reflection in the "silver" of *argent*).

Even more illuminating when you identify Adam's rib – a crescent, appropriately – with the extra day of the female month (the even month, notably, Eve's). [see p66]

THERE ARE ONLY SEVEN *identifiable* phases in each lunation. Phases surrounding these identifiable Spectres lack distinguishable features affording recognition. The seven 'gods' of the lunation include: waxing crescent (3); waxing half-moon (9); first full moon (15); second full moon (16); first waning phase (on day 17 in the cycle); waning half-moon (23); and the waning crescent (29/30) – *ie*, opposing crescents, opposed half-moons, twin full moons and the abominable herald of advancing decay. (The rest of the lunar Spectres are notoriously difficult to identify on sight.)

Their theophanies in the Egyptian and Greek pantheons incorporate (in order): Horus (Ares) the avenger brandishing his crescent-like sword; Thoth (Hermes) god of script and just measure; Amon (Apollo) the luminous one; Ra (Zeus) *the brightest one* – mistaken by scholars and historians as far back as the classical Greek age, for *the Sun*; Set (Poseidon) *infernal* god of the briny depths [*cf*, Satan]; Ptah (Hephæstus) the celestial smith; and Osiris (Hades / Pluto) embodying the crescentine phallus with which he impregnates the lunar goddess residing in the underworld (Isis / Demeter) on his demise, to beget 'the new lunation.

Each lunation begins anew with Osiris's 'son' Horus rising to avenge the death of a father at the infernal hands of Set (precipitant of the downfall of the terminal 'god' and other waning phases, by initiating the waning arc of the cycle).

The Week, in other words, conjoined the dominant theophanies of the lunation in an 'archangelic' hierarchy (not unlike the Christian godhead fused in Trinity). And the names of most of the planets arise from this divine pantheon as well: Ares (*Mars*); Hermes (*Mercury*); Set (*Saturn*); and Zeus (*Jupiter*). Given that Venus is a late Roman deity (whose earliest known temple in Rome was consecrated in 295 BC), it remains to consider whether prior references to the evanescent goddess Venus – Ninlil mother of the moon-god (in Sumeria), Isis (in Egypt), Ishtar (in Babylonia), Astarte (in Phoenicia) and Demeter or Aphrodite (in Greece) – might not in fact invoke the lunar goddess in her Aspect as regeneratrix of the sacred cycle.

Regents of the Alphabet

DAY	LUNAR PHASE	OLYMPIAN	EGYPTIAN	LETTER	
1	<i>no moon</i>	DEMETER	ISIS	Υ	1
2	<i>no moon</i>	ARTEMIS	NEPHTHYS	B	2
3	<i>waxing crescent</i>	ARES	HORUS	C	3
9	<i>waxing half</i>	HERMES	THOTH	Θ	8
15	<i>first full moon</i>	APOLLO	AMON	O	15
16	<i>second full moon</i>	ZEUS	RA	Π	16
17	<i>first waning</i>	POSEIDON	SET	Q	17
23	<i>waning half</i>	HEPHÆSTUS	PTAH	X	22
29/30	<i>crescent</i>	HADES / PLUTO	OSIRIS	doubles	

Nannar the moongod, for instance, embodied the complete Spectral cycle. While Ningal, wife of Nannar, conceived the successive Spectres of the lunation each daytime when the moon descends into the underworld realm of the goddess. Ninlil (mother of Nannar) gave birth to the lunation; Ningal (wife of Nannar), to the individual phases.

In later pantheons, a distinct Aspect of the goddess couples with each of the seven focal Spectres (the *Seven Sisters*, lunar long before their stellar transposition – scholars insisting ancient allusions to the seven daughters of Atlas, or Seven Hathors of Egypt, refer to the *Pleiades* – which are disproportionately dim).

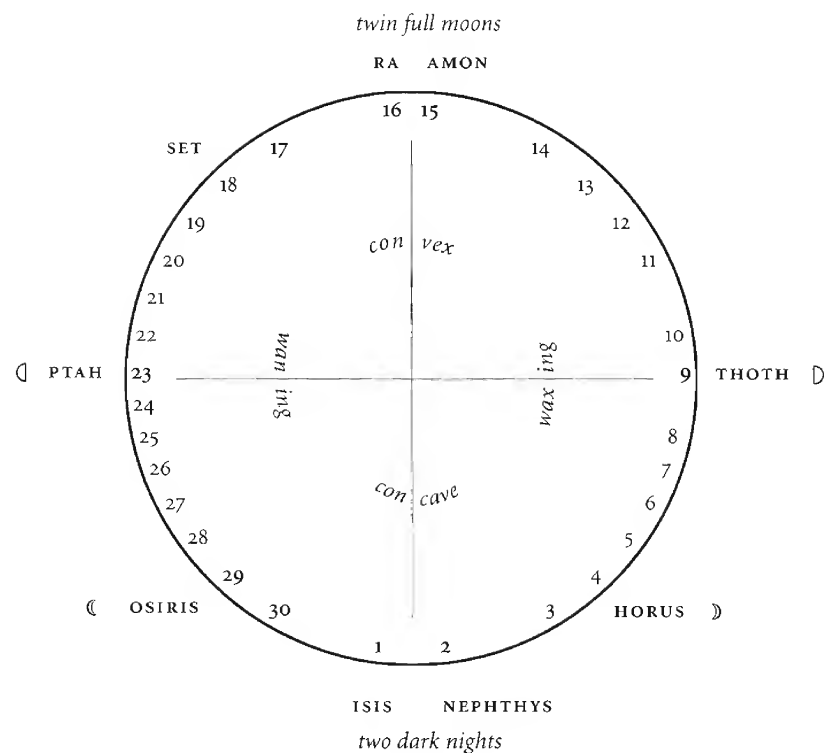


FIG II COMPASS OF THE EGYPTIAN THIRTY-DAY LUNATION

THE SIGNAL EGYPTIAN LUNATION incorporated 30 days divided into nine distinct measures:¹

- [A] one Goddess, two Shades;
- [B] a single God making 28 displays, with 7 Lamps;
- [C] three Inclinations;
- [D] four Quarters;
- [E] five Beacons;
- [F] six Realms;
- [G] seven Lamps;
- [H] eight Poles;
- [I] nine Regents.

21

Thus, several numbers present focal Egyptian lunar figures, whose recurrence in the texts and figurative glyphs of other cultures may signal evidence of a diffusion of lunar insights (like the *eight antipodal triads* composing the Taoist symbol of the universe, the *T'ai Chi T'u*).

The Yin-Yang disc at its core, portrays twinned serpents which represent the *polarity* of lunar cycle: a visible (*yang*) spectre looking into the underworld with its black eye; the shadowy (*yin* or *djinn*) aspect peering out with a white eye. This derives from the Eye of Ra – the goddess (or daylight) aspect ('white-eyed' Sekhmet) of the *spectre* Ptah the smith (waning half-moon) – long presumed a 'solar' disc from accounts of the Greek Classical and Hellenistic Ages.

- 1 [A] ISIS-NEPHTHYS (days 1-2) one Goddess, twin aspects
- [B] ATUM (days 3-30) one God assuming 28 spectres ~ 7:28
- [C] waning/underworld/waxing (16-30/1-2/3-15) 3 Inclines
- [D] concave/convex/convex/concave (3-9/9-15/16-23/23-30) 4 Quarters
- [E] waxing-crescent/wax-half/full/wan-half/waning-crescent (3/9/15-16/23/29-30) 5 Beacons: the pivotal spectres
- [F] dark/wax-crescent/wax-half/full/wan-half/wan-crescent (1-2/3/9/15-16/23/29-30) 6 Realms: the pivotal stations
- [G] HORUS-THOTH-AMON-RA-SET-PTAH-OSIRIS (3/9/15/16/17/23/29-30) 7 spectres or Lamps: focal gods
- [H] ISIS-NEPHTHYS-HORUS-THOTH-AMON-RA-PTAH-OSIRIS (1/2/3/9/15/16/23/29-30) 8 Poles: the pivotal deities
- [I] ISIS-NEPHTHYS-HORUS-THOTH-AMON-RA-SET-PTAH-OSIRIS (1/2/3/9/15/16/17/23/29-30) 9 Regents: *Ennead*



FIG III T'AI CHI T'U or Supreme Ridge-Pole Design

NOTE lines of opposing trigrams sum to nine – the ordinal of the night of half-moon – represented by the pivotal *yin-yang* figure of Okeanos: complementary nines, or the twin æthers simultaneously engulfing halves of the moon on the hallowed ninth night of her cycle.

NOTE ALSO *tao* → *theo*: the Taoist explores the 'numerology' of the trigrams, while his Confucian counterpart conjures their 'moral import' – *ie*, 'the science of figure' opposing 'the rite of the spirit'.

LUNAR MNEMONIC OF THE T'AI CHI T'U 500 BC

THE FAMILIAR Taoist symbol of the universe, the octagonal glyph of the T'ai Chi T'u ("supreme ridge-pole design"), comprises another unrecognized lunar figure: eight segments each housing a different trigram of lines – lines either broken or unbroken. Beginning at its foot (6:00) with three broken lines – north (or extreme *yin*) – the image sustains the impression of a view uniformly broken. This signifies the first night of lunar cycle when there is no moon in the sky. Counter-clockwise (4:30), or west where the moon first appears, we find an unbroken line near the perimeter and two broken lines toward the axis – a shape resembling waxing crescent. At 3:00 we encounter waxing half-moon – broken lines enclosing an unbroken line. At 1:30 the waxing phase has swollen further – two unbroken lines at the perimeter with a broken line near the axis. At noon (south, or extreme *yang*), three unbroken lines – full moon. At 10:30, the waning phase is ushered in – two unbroken lines again, but this time on the inside near the axis, with the broken line at the perimeter. At 9:00, the waning half-moon – unbroken lines enclosing a broken line. At 7:30, waning crescent – an unbroken line at the axis with two broken lines at the perimeter. The cycle count is achieved by resting at the extremities – two nights of no moon mirroring two nights of full moon. Thus, $10 \times 3 = 30$.

At the centre of the glyph resides the so-called *yin-yang* symbol which represents the twin streams of Okeanos, two serpents – one looking into the light, the other peering out. They form a circle because the moon appears to traverse the sky in an arc and was presumed to continue its course through the underworld arc of Okeanos – its rising point through the period of a monthly cycle, snaking across the night sky from west to east. The moon further snakes between two distinct north and south declinations during its complete 18.6-year cycle: $\pm 29^\circ$ and $\pm 19^\circ$.

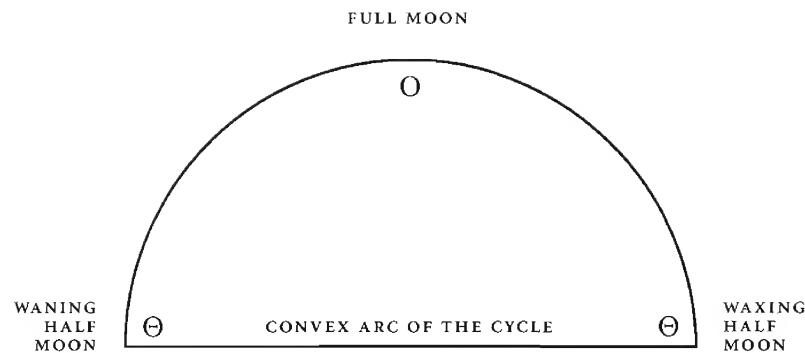


FIG IV HERMES TRISMEGISTUS AS A GREAT HALF-MOON

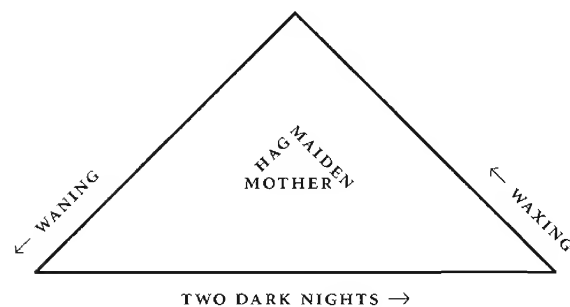


FIG V INCLINATIONS OF THE TRIPLE GODDESS

FIGURATIVE ORIGIN OF HERMES TRISMEGISTUS

THE PHASE IN THE LUNATION identified with Thoth or Hermes is waxing half-moon. The letter of the alphabet he embodied was *teth* or *theta* (Θ) representing the sound 'th'. The name 'Thoth', when employing the Greek characters, comprises a palindrome (Θ O Θ) which further describes a rebus posing the vertices of a great half-moon. A name comprised of three characters which phonetically embody the pivotal spectres of the convex arc of the lunar cycle: full moon and the two half-moons. (The other pivotal spectres of the lunation – the two crescents – are alone concave.) In other words, the phonemes of the name 'Thoth' are depicted by the symbols employed to position the pivotal spectres of the gibbous or convex arc of the lunation compass. Furthermore, these three pivotal spectres trace a great half-moon across the compass of the lunation: a Great Thoth (Thoth being the *embodiment* of half-moon). Three lunar spectres combining to produce one great figurative spectre – as in Hermes Trismegistus: thrice-great Thoth.

CONCEPTION OF THE TRIPLE GODDESS

THE TRIPLE GODDESS embodies a refinement of the mate of the moongod: *Goddess of Abundance*, emergent Maiden, begetting the waxing arc of the cycle (her spectral progeny increasingly full); the *Goddess of Decrease*, declining Hag, the waning arc (delivering a progressively lean litter); and the *Goddess of Renewal*, paradigm of the Mother, calving the new lunation.

The goddess is never seen; she remains in the underworld (the white, or lunar, goddess thereby synonymous with the Earth-Mother Goddess in earlier cultures). The moongod alone is visible. Yet two nights each lunation, he too subsides into the underworld lair of the goddess – the two nights between crescents, without a moon in the sky – a dark interval which provides the key to the mysteries of ancient myth. This is also why the underworld was considered the realm of the goddess: the moon confined there two nights, or half-days, longer than the sun each month.

SIX NOTABLE CALENDAR MEASURES after Narâm-Sin: [1] BEL; [2] HOR; [3] AP; [4] SET; [5] DAN; [6] BRAN. The names from which these ‘sectarian’ syllables resound, appear throughout the scriptures, myths and inscriptions of cultures from the Mediterranean and Middle East to the Irish, North and Baltic shores – attesting their alignment with a particular cycle: [1] 56-year; [2] 70-year; [3] 25-year (all employing the 360-day year of twelve 30-day months); [4] the variable 29-day/30-day month; [5] 8-year 100-month (eleven 29-day plus 1½ thirty-day months producing a 364-day year); [6] 8-year 99-month (the Dan cycle rising from the Set measure – which developed into the Bran measure, on the removal of the Hyksos to Canaan in the campaigns of Seti I and Rameses II).

The transitional measure of Akhnaton – which appears to have advanced a compromise of the competing Hor and Set measures, with a 360-day year of eight 45-day ‘months’ – ultimately engendered the 8-year Dan cycle.

The sacred bulls designated the various Egyptian cycles: the black *Mnevis* bull of On (Heliopolis) representing the 56-year nodal regression round; the *Apis* bull of Memphis (with white crescent or diamond marking) signifying the 25-year lunar round; and the *Bakh*, *Buchis* or *Bukhe* bull of No (Thebes) – a white bull with black head – representing the 70-year Horus cycle. *A’anefer* (*A’ah* “moon” + *nefer* “swallowed”) – the sacred bull of Erment (*Iun-Mut*) – adopted the theophany of Amon from *Bakh* with the move south from Thebes to Erment. Three bulls identified by their markings or epithets (*Apis* ‘the hidden one’) with the underworld – home of Isis whose theophany was the cow – in other words, three *unapparent* cycles.

Apis (theophany of the triad – Ptah / Sokar / Osiris) and *Bakh* (symbolic of Horus and Osiris: *A’anefer* resounding *Wen-nefer*), moreover, appear complementary – which suggests their integration in a third figure. *Mendes*, the sacred ram, likewise summoned the spectre of Horus (Harpakhrad), while the ram was a conspicuous theophany of Amon (Ment) – also identified as ‘the hidden one’. *Mendes*, in this light, appears to represent the conjunction

cycle of the 70-year solar (*Bakh*) and 25-year lunar (*Apis*) rounds: the 3950-year measure, ultimately refined to the 350-year cycle.

Thus, before the intrusion of the disruptive Set measure, there were conjecturally four sacred cycles or ‘great years’ in Egypt, arguably introduced by Narâm-Sin of Akkad: [1] MNEVIS 56-year; [2] BAKH 70-year; [3] APIS 25-year; [4] MENDES 350-year.

Given my contention that the *Apis* bull represented the priestly 25-year lunar round; and the conspicuous 56-year interval of Chephren’s reign;² it seems more than likely that the colossal undertaking of the pyramids of Giza presents the ancient Egyptian determination to erect monuments as permanent as their sacred cycles: the 70-year *Bakh* solar round (Cheops); the 56-year *Mnevis* or nodal regression round (Chephren); and the 25-year *Apis* or priestly lunar round (Mycerinus). Pyramids whose relative sizes reflect the relative durations of the cycles. This would explain the priests’ sense that Mycerinus was the ‘son’ of Cheops – the 70-year and 25-year cycles *related* through convergence in the 350-year Mendes cycle.

The triad of Giza observatories was arguably focused on points in the extended 56-year course cycle, realized after 25, 56 and 70 years, respectively. The observation rites could commence 25 years into the 56-year cycle, from the small pyramid of Mycerinus (Menkaure) and arguably proceed 14 years beyond the 56-year cycle (or a quarter-cycle) to the phase visible after 70 years, from Khufu: the flanking sights set at points of phase recurrence 56 years from *their* start.

Lending to the suspicion that each pyramid was erected to survey a specific sight over a vast protraction of time: the interval between recurrences of the same phase at the same place in the sky on the same solar date. Sighting focal points on the course cycle would enable the lunar priests to perfect a measured sequence of the phases captive in their scopes at the critical solar intervals.

² “The reign of Chephren lasted 56 years.” [HERODOTUS, BOOK II CHAPTER 127; RAWLINSON, *The History* VOLUME I, p180]

SET lord of the waning half of the cycle, ruled the underworld from the greatest height of all the deities who might lay claim to the 'infernal' throne. And with his rise to the status of focal deity, the Set measure projected a revised model of the traditional pantheon requiring the addition of an extra god (Eurymedon). This Dan measure prevailed through two 8-year calendars (the 99-month variant here identified as the Bran measure, in accord with Abram's age – 99 – when he introduced the eighth letter into his name), both conspicuously in conflict with the traditional Horus / Apis measures of the colonies of Narām-Sin. In Greece, a new pantheon³ introduced the 8-year 99-month Danaïd measure, ultimately installing a tyrannical new priesthood. The age of Tyranny in Greece extending from 685–490 BC, while the Olympiad – which recurred every four years in step with the 8-year measure⁴ – began in 776 BC (the very year the alphabet is supposed to have arrived in Greece).

- 3 CRONUS + RHEA → HESTIA, DEMETER, HERA; HADES, POSEIDON, ZEUS (3 girls; then 3 boys, in the above order) – the OLYMPIAN pantheon composed of 13 deities (like the initial TITAN pantheon, though *it* comprised 6 gods and 7 goddesses) including the 6 children of CRONUS and 7 children of ZEUS (both youngest sons because they each originally embodied waxing crescent initiating their respective measures):

ARES (ZEUS + HERA)	<i>Horus</i>	APHRODITE (Z + Dione)
HERMES (ZEUS + Maia)	<i>Thoth</i>	HESTIA
APOLLO (ZEUS + Leto)	<i>Amon</i>	ARTEMIS (ZEUS + Leto)
ZEUS	<i>Ra</i>	HERA
POSEIDON	<i>Set</i>	DEMETER
HEPHÆSTUS (Z + HERA)	<i>Ptah</i>	ATHENA (ZEUS + Metis)
HADES/PLUTO	<i>Osiris</i>	DEMETER

NOTE that Hades embodies a duplex spectre bearing separate names – the 'extra' crescent making *Pluto* "wealthy" – to accommodate the alternating 29-day and 30-day months. Demeter (or 'double mother' for the two dark nights) doubles as his consort because Hades represents the terminal form of Poseidon – with whom she conceived Arion – his crescent being the final phase in the waning arc initiated by Poseidon.

- 4 four years of 50 months (a female Olympiad) followed by four years of 49 months (its male counterpart)

A REMARKABLE DISCOVERY affords conclusive evidence that the ancient Egyptian god Horus was not in fact the sun-god history contends, but rather a lunar theophany of the waxing crescent (in a schematized lunation). The other gods of the Egyptian pantheon prove, in turn, to represent the successive lunar phases.

Myths of the various conflicts between Horus and Set involve destruction of the Eye of Horus (*wadjet*). In one myth Set tore the eye into six pieces which he scattered to the wind. The *Ennead* or Council of Deities directed Thoth to recover the parts and restore the eye.

As Horus represents waxing crescent (which emerges on day 3 of the lunation), Thoth embodies waxing half-moon (occurring on day 9 in the cycle) – consecutive *focal* phases of the rising arc of the lunation, separated by six nights. The *eye* of Horus, in this respect, reflects the first *visible* phase of the new lunation – the first two nights of the cycle remaining dark without any moon in the sky – while the six pieces of the eye represent the six spectres of the concave quarter of the rising arc which fuse to form the half-moon (completing the reign of the concave spectres – before the throne of heaven is relinquished to the gods of the gibbous spectres of the convex quarter of the waxing arc).

The six portions of the figurative eye were subsequently adapted as measures by Egyptian mathematicians – each part designating a signal fraction employed in the measure of volume (the *hekat* fractions). The portion of the cornea nearest the nose represented $\frac{1}{2}$ and was associated with the sense of smell. The pupil signifying $\frac{1}{4}$ represented sight. The eyebrow added $\frac{1}{8}$, inclined to thought.

The outer portion of the cornea comprising $\frac{1}{16}$, appears drawn to the sense of hearing. The falcon flange beneath the eye (toward the ear) designated $\frac{1}{32}$, directing attention to the sense of taste. While the figurative leg depending from the eye (toward the nose) comprised the fraction $\frac{1}{64}$, partial to the sense of touch – as in 'touching down'.

Addition of the *hekat* fractions, however, presented an inexplicable discrepancy: restoration of the Eye of Horus from the recovery of all the parts leaves $\frac{1}{64}$ unaccounted

for $[\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{32} + \frac{1}{64} = \frac{63}{64}]$. In the myth, the missing portion was ultimately supplied by Thoth, the god of just measure.

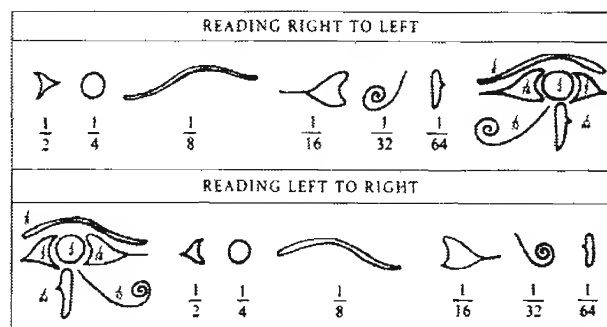


FIG VI THE DIVINE FRACTIONS OF THE HEKAT
[1FRAH, *The Universal History of Numbers*, p169]

There is something more to this equation, it turns out, than meets the eye of scholarly consensus. When applied to the length of the Egyptian month (30 days) the product of the assembled fractions relinquishes the length of the mean lunation, *to within a minute* [$\frac{63}{64} \times 30 = 29.53125$]. The length of the average lunation is currently calculated at 29.530588 days; the difference between the modern and the putative Egyptian measures amounting to 57.1968 seconds.

Somehow the Egyptians appear to have recognized that the difference between the calendrical expedient of their 30-day month, and the actual length of the mean lunation, comprised a 64th of the month!

The Eye of Horus, in other words, embodied two distinct *lunar measures*: the Egyptian month of 30 days (discrete); and the mean lunation (anatomized), which the Egyptians apparently calculated to extend 29 days 12 hours 45 minutes (our contemporary calculation 29 days 12 hours 44 minutes 3 seconds).

The leg symbol for the fraction $\frac{1}{64}$, moreover, denoted 'rest' and 'healing'. 'Rest', it now becomes clear, because the terminal fraction of the lunar equation required doubling – or 'resting at that point in the equation', to count it again – in order to complete the month and 'heal' the shattered Eye of Horus fully.

It bears further notice that the terminal phase of the schematized lunation – waning crescent, represented by the Egyptian god Osiris – embodied a duplex count when two successive lunations were configured alternately as male (29-day) and female (30-day) months: the terminal phase counting as day 29 in the first and day 30 in the second.

The waning crescent of the 30-day month, therefore, was to be equated with the missing 64th in the *hekat* equation, supplied by Thoth – a categorically *underworld* completion (in that it embodied an interval which could not claim to reside in the lunation, the actual source of time: because $\frac{63}{64}$ of the 30-day month exhausted the lunation). An echo from the catacombs of the underworld goddess, Hecate...

The equation of the *hekat* fractions – with denominators doubling – also prefigures the celebrated Paradox of Zeno (Zeno of Elea, *fl. ca* 460 BC): a sequence of successive half-measures extending to infinity without ever reaching their terminus (unity).



FIG VII THE EYE OF HORUS

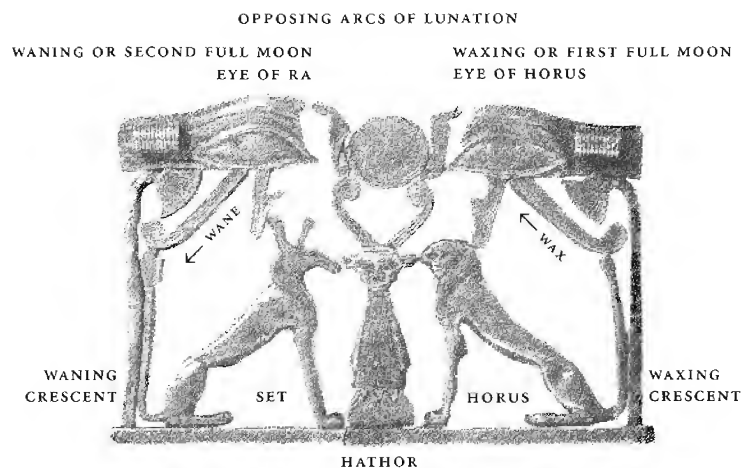


FIG VIII TWELFTH DYNASTY GOLD PECTORAL
[CASHFORD, *The Moon*, p359]

THE EYES OF HORUS have long been held to figure the sun and moon, yet my research challenges the established reading. As the image opposite illustrates, the Eye of Horus mirroring a second Eye of Ra, accords perfectly with twin full moons presiding over their respective arcs of lunation: Horus as waxing crescent representing the first visible phase of the waxing arc (which culminates with first full moon); and Ra as second full moon, the first *phase* of the waning half of the lunation. [see p20]

In the composition, Set figures as the first *waning spectre* (mirroring Horus as his waxing counterpart) because the Eyes surveying their respective arcs *embody* the two full moons. Hathor between them – with two opposing horns to reflect the mirror-images of the opposing crescents – represents the two dark nights between crescents when the moon ‘remains’ in the underworld realm of the goddess. The winged disk above her configures a complete lunation.

Thus the composition of Horus confronting Set may be reviewed as a depiction of ‘first waxing spectre’ figuratively complementing ‘first waning spectre’ – with opposing Eyes of Horus and Ra surveying their respective arcs of lunation from the pinnacle of the cycle: that of Horus oriented as ‘rising to its brightest light’ (first full moon) and that of Ra ‘descending from its brightest point’ (second full moon).

Few scholars realize that there are two apparent full moons every lunation or that the cycle begins with two dark nights without any moon in the sky. Thus the lunar key to ancient myth has remained obscure. Neither have they recognized that the seven focal gods represent the seven focal phases; nor that the alphabet is a serial mnemonic of lunar cycle.

The figure of Horus and Set is a depiction of lunar cycle employing traditional iconography – feline trunks drawing on the lion as the symbol of half-lunation (as at Mycenæ); & elaboration – papyrus crown (*djet*) conjuring half-moon, the phase ruled by Thoth (*Djehuti*).

PREHISTORY

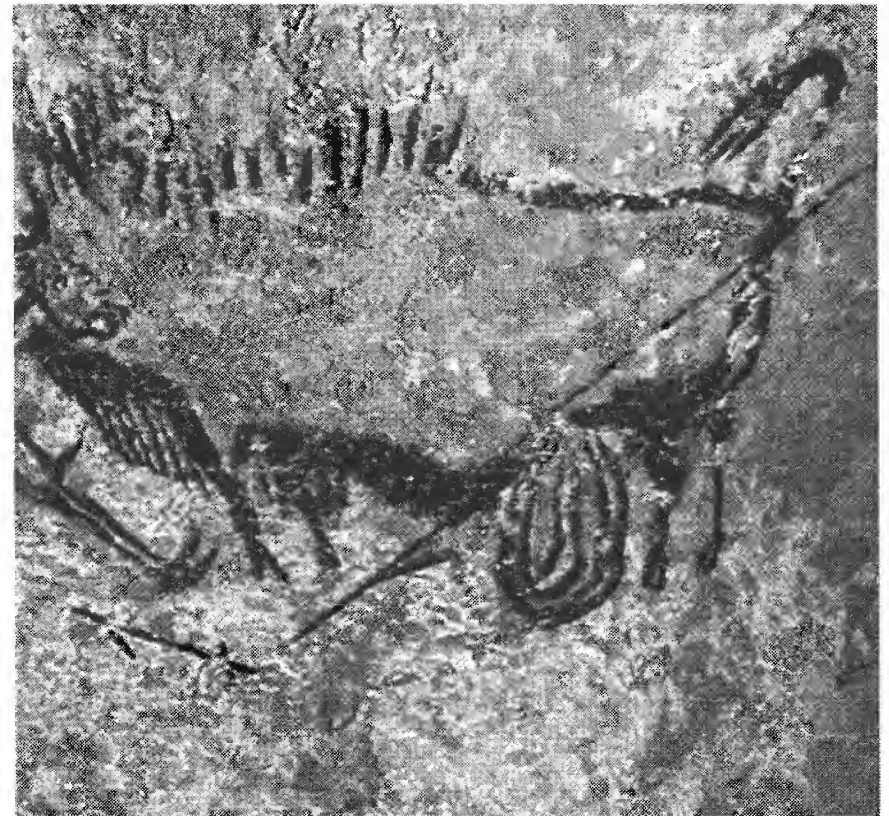


FIG IX PALÆOLITHIC SHAFT SCENE [AUJOULAT, *Lascaux*]

THE SHAFT SCENE AT LASCAUX – secreted from view in a pit sixteen feet beneath the floor of the Great Fissure – complements the putative symbolism of the Introductory Frieze in the Great Hall of the Bulls.

The bison's erect tail – describing a waxing crescent – incorporates three fringe counts to signify the appearance of the new crescent on the third night of the cycle. Proceeding left along its back (*ie*, counter-clockwise – as the figurative lunation was conceived to advance: from waxing crescent on the right to waning crescent on the left) are 22 hackles between tail and head, with 3 more on the forehead between the horns: completing a count of 30 phases with the horns [$3 + 22 + 3 + 2 = 30$].

The three strokes between the horns, mirroring the fringe of the tail, represent the twin full moons (nights fifteen and sixteen of the cycle) plus the first waning phase (night seventeen) which is frequently confused with the full moon – the last of the strokes accordingly declining, to indicate the start of the waning arc.

Fourteen marks radiate from the underside of the bison – the number of nights from the second full moon (night sixteen) to the waning crescent (night thirty). It bears noting that the tucked and rounded head describes a circle – the fringe of the underside depending beyond the head precisely as the waning phases succeed the appearance of the second full moon.

The underbelly (which has otherwise been interpreted as an evisceration or disembowellment) appears to exhibit a vulva: the subterranean orifice, or cave, from which the lunar goddess, or moon, was presumed to emerge – the deity further credited with *magically* inducing birth. This reproductive cavity is segmented from the bison's torso by the so-called spear, in part, to isolate the concept of lunar generation: *ie*, the cycle of lunation advancing from the bowels of the underworld (the mouth of the cave).

The line of the so-called spear is directed beneath the beast to another directional glyph – comprising six lines – aimed at the bird on a stick, and ultimately at the tail of the rhino.

A birdman above the glyph describes a compositional oblique, lending to the suspicion that he may represent the half-moon – whose diameter is inclined to the same *oblique* – the line of the so-called spear through the hind quarters of the bison further simulating the opposing oblique: the lunation figure *quartered*.

Birdman's penis is erect to signify *rising* half-moon; while his counterpart's stick-perch delineates the telltale stroke of *downfall*, identifying the waning half-moon. The putative half-moon bird figures are accordingly faced in opposite directions. Birds were naturally associated with those phases of the lunation which resemble the outstretched wings of a soaring figure – the gibbous phases between waxing and waning half-moons conversely exceeding the outline – half-moons embodying the culmination or apex of the bird-quarter phases (crescent to half-moon).

Birdman's left hand with 4 fingers gestures to the bison's right horn (with tip turned up to identify it as waxing crescent). This signifies that the addition of Birdman's counts (eight fingers in all) to the two moonless nights preceding waxing crescent – symbolized by the two spokes of Birdman's beak, which recollect the strokes from the unicorn's forehead in the Introductory Bull Frieze – brings us to the 10th night and the phase of waxing half-moon (embodied by the Birdman).

Likewise six nights after the waning half-moon – the six rhino 'excretions' – waning crescent appears (depicted in rhino's tail). The rhino is only partially drawn – fading into the underworld – to represent the end of a cycle (his two horns figuring the two dark nights until the succeeding lunation is rendered visible).

It struck me early on in my study of Palaeolithic art, that the heirs of the pioneering lunar surveyors may have deliberately advanced from cumbrous incisions on bones and cave walls (requiring exacting labour to compare with future counts) to the radical distillate of iconic intervals. Somewhere they kept a control database of their catalogue of figures, each distinguished presumably with characteristic counts (either with dapples or as in the example of the

Shaft Scene bison, numerating fringe). Control measures which would conceivably have been secreted in the most inaccessible places (*chatières*) underground as a backup of their deciphering keys – for insurance – Lascaux cave, in my estimation, a focal decoder preserve.



FIG X LAUSSEL HORN [MARSHACK, *Roots of Civilization*, p335]

THE VENUS OF LAUSSEL France holds a crescent incised with thirteen marks, aloft in her right hand. The prevailing consensus among archæologists and anthropologists cites her horn as a paradigm of phallic force and fertility; while others see in it a drinking horn proffering a sacred libation – menstrual blood – to the gods.

As a composition of lunar measure, however, the horn is recognizable as a depiction of the crescent moon. Waxing crescent of the lunation resembles the crux of the right arm (while waning crescent is simulated by curving the left). In general the full moon occurs twelve days after the crescent.

Which renders the figure a sculptural representation of the lunar goddess as earth mother goddess (because the visible phases of the lunation emerge on the horizon from below). She holds a symbol of the waxing arc of lunation aloft to emphasize that at its height, the full moon appears. Waxing crescent gives rise to the full moon after 12 nights – the increasingly swollen phases of waxing arc borne aloft by the goddess as her ripening fruit – crescent to full moon incorporating 13 phases.

Her left hand rests on her belly pointing out a relation between the womb and the contents of the other hand. It is hardly controversial to interpret the hand in general as a symbol of measure.

The phases of the waning arc of the lunation, in contrast, proceed to shrivel away, characterizing the fruit of decay rather than birth. These phases may have been perceived by ancient man as the goddess's original thirteen phases being eaten away by the underworld serpent.

The serpent in the Garden of Eden entices Eve to taste the forbidden fruit of the Tree of Knowledge of Good and Evil because the enigma of rationalizing lunar and solar cycles involves the waning or serpent arc of the lunation – the arc initiated by the Egyptian god Set or Satan [see p20] – where the terminal phase of the entire cycle (waning crescent) falls in one month on the 29th day and in the next on the 30th. [see p66]

TWO AZILIAN WALL PAINTINGS described by Alexander Marshack are represented to illustrate the presence of lunar computation during the Mesolithic Age. To quote Gerald Hawkins:

"The rock painting at Canchal de Mahoma is a correct observational record. It was made no later than 7000 BC.... The month sequence starts at the lower left with the thin crescent, facing to the right, exactly as it shows in the sky at sunset. Then follows a count of six spots, one for each night. The eighth spot is large and separated, beginning a new sequence of four. This is the night of the first quarter; the sequence of four is the waxing phase to full. Three marks in a cluster show the nights of bright full moon. The waning sequence runs over the top of the god sign. Mark 21, accentuated, is for the queen of the dawn, last quarter moon, and the final six (counting the 'v' sign as two) closes off the month with the crescent facing to the east (left) as it does in the sky."
[HAWKINS, *Beyond Stonehenge*, pp230/1]

The second example occurs in a cave at Abris de las Viñas, also in Spain – dating between 8000 and 6000 BC.

"The sign in the center of the Viñas pattern is clearly anthropomorphic, man or god. The moon story is shown by the 30 marks. It can be read from right to left, counter-clockwise as at Mahoma, or from left to right. It reads the same numerically both ways. This is because of the symmetry of the moon's phases. The days of invisibility were included in the pattern to make up the total of 30 days.... When the new-moon crescent appears there will be six more nights of crescent moon. Then on the eighth night the half-moon will show. It will be followed by five nights of the gibbous phase (almost a complete disk). The fourteenth night begins the illumination of the full moon. This will last for three successive nights. On the seventeenth night of the phases (shown by the spot at the top of the pattern) the moon begins to wane. It will decrease for a sequence of seven nights (seven declining dots), and then during a further seven nocturnal appearances it will become an early morning crescent and disappear at the change."
[HAWKINS, *op cit*, pp232-4]



FIG XI CANCHAL DE MAHOMA [HAWKINS, *Beyond Stonehenge*, p231]



FIG XII ABRIS DE LAS VIÑAS [HAWKINS, *op cit*, p233]



FIG XIII TASSILI MURAL [THORNDIKE, *Mysteries of the Past*, pp244/5]



conventionally interpreted as a scene "depicting a Stone Age cattle roundup" [ROBERT CLAIBORNE, *op cit*, p243]

THE NEOLITHIC denizens of the Tassili ("plateau of rivers" in southern Algeria – dry now 4000 years) were a pastoral people who left innumerable rock paintings. The example discussed – calculated between 6000 and 3500 years old – bears the figures of 29 men, 15 facing right, 14 left (comprehending lunar cycle) apparently herding cattle (*ie*, phases). Fifteen cows are tethered in a row, with a sixteenth beyond the row facing in the same direction in which the final cow is looking (*ie*, twin full moons). The first three figures in the series are not fully formed but rather represented by oval daubs of paint (resembling torsos) – signifying the first three days of lunar cycle when no moon is visible in the sky (usually for two nights). Behind them looms the outline of a cow without neck or head – portending the appearance of waxing crescent. The cow outside the line (signifying the second full moon) is positioned next to the fourteenth figure in the row to indicate that a return count (to complete the waning half of the cycle) should commence there. Counting back up the line thus secures a total of thirty. That the count is meant to commence at the top is shown by the conjunction of crescents placed before the three unformed figures. Behind the line of cows appear only bulls – 53 remaining visible today (several of which are obviously faded, supporting the speculation that others may also have disappeared) – 28 facing to the right and 25 facing left. Given the three closed circles to the left of the tableau it appears that this diorama preserves the mnemonic of a season – the months already counted having 'earned' their horns, while the line of cows assume crowns once the cycle moves back to the beginning (where those disembodied horns hover). The cow-line alone however remains integral to an understanding of the characteristics of typical lunar measure, in the positioning of the invisible entities and twin full moons and the point at which the return count should commence.

MEASURES

Natural Lunar Cycles

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MEAN LUNATION

29.530588 days on average between successive waxing crescents⁵

COURSE CYCLE: 18.6-YEAR 230-LUNATION

230 lunations \times 29.530588 days = 6792.0352 days
 6792.0352 days \div 365.2422 days = 18.595976 years
 6792.0352 days \div 365 days = 18.608315 years
 6793 – 460 = 6333 traceable courses completing a cycle

NODAL REGRESSION ROUND: 56-YEAR 690-LUNATION

690 lunations \times 29.530588 days = 20,376.105 days
 20,376.105 days \div 365.2422 days = 55.787926 years
 20,376.105 days \div 365 days = 55.824945 years
 three Nodal Regression or course cycles – approaching the
 smallest whole number of years enabling the ancient observer
 to trace some 19,000 (3 \times 6333) lunar courses through 56 years

PHASE CYCLE: 19-YEAR 235-LUNATION

19 \times 365.2422 = 6939.6018
 235 \times 29.530588 = 6939.6882

NOTE that this ‘convergence’ of lunar and solar cycles is merely apparent – the moon requiring 2 hours, 4 minutes and 25 seconds (124.416 minutes) longer to complete its cycle than a compound of 19 solar years. An undetectable discrepancy without advanced instruments, however, given the fact that the ‘convergence’ occurs more than halfway through the 6940th day and not at some tidy terminus like midnight (the conclusion of 19 solar cycles on that day, by current reckoning, 2:26:35 PM; and of a Metonic lunar cycle, 4:31 PM – if both cycles *had* commenced simultaneously at the stroke of midnight 6940 days earlier). The moon, of course, being considerably more difficult to detect during the afternoon.

- 5 Although most authorities believe that the ancient astronomers were primarily interested in establishing the mean measure of a lunation, I think they focused their attention on the variability between focal phases, in pursuit of a pattern of recurrences (a command of the impending cycle far more empowering than mere recourse to a mathematical mean).

COURSE / PHASE CONVERGENCE MODEL: 1767-YEAR

18.6 years (course cycle) \times 19 years (phase cycle) = 353.4 years
 five such products compounding the smallest whole-year sum:
 353.4 \times 5 = 1767 years
 1767 years \times 365.2422 days = 645,382.9674 days
 645,382.9674 \div 6792.0352 days (course) = 95.020555 cycles
 95 course cycles \times 6792.0352 days = 645,243.34 days
 645,382.9674 \div 6939.6018 days (phase) = 92.999998 cycles
 93 phase cycles \times 6939.6018 days = 645,382.96 days
 645,382.96 phase days – 645,243.34 course days = 139.62 days
 (ie, 93 phase cycles are completed 140 days [2 \times 70 or 4 $\frac{2}{3}$ \times 30]
 after 95 course cycles)
 18.6 \times 5 = 93 years (5 course cycles)
 19 \times 5 = 95 years (5 phase cycles)
 93 \times 95 = 8835 = 1767 \times 5
 16 phase cycles = 111,035 days [16 \times 6939.6882 = 111,035.01]
 256 course cycles = 1,738,761 days [256 \times 6792.0352 = 1,738,761]
 3782 years = 1,381,346 days [3782 \times 365.2422 = 1,381,346.0004]

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1994	CRESCENT	HALF-MOON	INTERVAL
JANUARY	11 (6:10 PM)	19 (3:27 PM)	8 (189:17)
FEBRUARY	10 (9:30 AM)	18 (12:47 PM)	8 (195:17)
MARCH	12 (2:05 AM)	20 (7:14 AM)	8 (197:09) L
APRIL	10 (7:17 PM)	18 (9:34 PM)	8 (194:17)
MAY	10 (12:07 PM)	18 (7:50 AM)	8 (187:43)
JUNE	9 (3:26 AM)	16 (2:56 PM)	7 (179:30)
JULY	8 (4:37 PM)	15 (8:12 PM)	7 (171:35)
AUGUST	7 (3:45 AM)	14 (12:57 AM)	7 (165:12)
SEPTEMBER	5 (1:33 PM)	12 (6:34 AM)	7 (161:01)
OCTOBER	4 (10:55 PM)	11 (2:17 PM)	7 (171:22)
NOVEMBER	3 (8:35 AM)	10 (1:14 AM)	7 (160:39) S
DECEMBER	2 (6:54 PM)	9 (4:06 PM)	7 (165:12)

NOTE that the difference between longest and shortest intervals separating such focal phases may be more than a day and a half: between waxing crescent and half-moon in 1994, for example, the greatest interval extended 197 hours 9 minutes while the shortest interval consumed 160 hours 39 minutes, an enigmatic disparity of no less than 36 $\frac{1}{2}$ hours for the ancient observer to endeavour to reconcile.

BEL MEASURE: IDEALIZED 30-DAY CALENDAR MONTH

Twelve calendar months of 30 days producing a calendar year of 360 days requiring the addition of: five intercalary days per year in Egypt (known as the *Epact*); and an extra embolismic month every six years in Babylon.

APIS CYCLE: 25-YEAR 309-LUNATION 9125-DAY

$$25 \times 365.2422 = 9131.055$$

$$25 \times 365 = 9125 \text{ days rounded}$$

$$309 \times 29.530588 = 9124.9516 \text{ days}$$

$$9125 \text{ days} \div 309 \text{ lunations} = 29.530744337 \text{ days/month}$$

$$9131.055 \text{ days} \div 309 \text{ lunations} = 29.550339 \text{ days/lunation}$$

NOTE that the close approximation of the length of a lunation realized with this priestly lunar calendar ($29.530744 \approx 29.530588$; *ie*, merely 13 seconds longer than an astronomical lunation) was achieved only because it was not aimed at rationalizing a whole number of lunations with the solar (365.2422 days) but rather the calendar year of 365 days. The difference over 14 cycles requiring the intercalation of 84 days every 350 years [$6.055 \times 14 = 84.77$]; while a second Great Year Cycle was needed to add a day every 500 years for the difference between 309 lunations and 9125 days.

BAKH CYCLE: 70-YEAR 865-MONTH 25,550-DAY

$$70 \text{ years} \times 365.2422 \text{ days} = 25,566.954 \text{ days}$$

$$70 \text{ years} \times 365 \text{ days} = 25,550 \text{ days rounded}$$

$$25,550 \div 29.530588 = 865.20458$$

$$865 \text{ lunations} \times 29.530588 \text{ days} = 25,543.958 \text{ days}$$

MENDES CYCLE: 350-YEAR 4326-LUNATION 127,750-DAY

$$350 \times 365.2422 = 127,834.77 \text{ days}$$

$$350 \times 365 = 127,750 \text{ days rounded}$$

$$127,834.77 - 127,750 = 84.77 \text{ intercalary days (solar)}$$

$$127,834.77 \div 29.530588 = 4328.8934 \text{ lunations}$$

$$127,750 \div 29.530588 = 4326.0229 \text{ lunations rounded}$$

$$4326 \times 29.530588 = 127,749.32 \text{ days}$$

$$4328.8934 - 4326 = 2.8934 \text{ intercalary lunations}$$

$$2.8934 \times 29.530588 = 85.443803 \text{ intercalary days (lunar)}$$

Projecting an intercalation of 84 days – or twelve 7-day weeks – through 350 years: one week every 30 years for 11 rounds, with the final week added 20 years or two-thirds of the way through the twelfth round; a convergence cycle figured as $11\frac{2}{3}$ intervals – or 30-year ‘great months’ – of a modular 360° circuit portending a 360-year ‘great year’; or in other words, the 350-year ‘great year’ was implemented as $11\frac{2}{3}$ of an idealized circuit of 360° .

PHOENIX CYCLE: 500-YR 6180-LUNATION 182,500-DAY

$$25 \text{ years} \times 365 \text{ days} = 9125 \text{ days (25-year Apis cycle)}$$

$$309 \text{ lunations} \times 29.530588 \text{ days} = 9124.9516 \text{ days (Apis cycle)}$$

$$9125 - 9124.9516 = .0484 \text{ day discrepancy per cycle}$$

$$500 \text{ years} \times 365 \text{ days} = 182,500 \text{ days (20 Apis cycles)}$$

$$20 \text{ cycles} \times .0484 \text{ day} = .968 \text{ day (23 hours 14 minutes)}$$

The ‘great year’ of the Phoenix, or Benu bird accumulating a day (.968 day) every twenty Apis intervals – conforming with the myth of a Phoenix visiting Heliopolis once every 500 years:

“They [the Egyptians of 455 BC] have also another sacred bird called the phoenix, which I myself have never seen, except in pictures. Indeed it is a great rarity, even in Egypt, only coming there (according to the accounts of the people of Heliopolis) once in 500 years, when the old phoenix dies. Its size and appearance, if it is like the pictures, are as follows: the plumage is partly red, partly golden, while the general make and size are almost exactly that of the eagle. They tell a story of what this bird does, which does not seem to me to be credible: that he comes all the way from Arabia, and brings the parent bird, all plastered over with myrrh, to the temple of the Sun. Such is the story they tell of the doings of this bird.” [HERODOTUS, BOOK II CH 73; RAWLINSON, *The History* VOLUME I, ppi49/50]

EGYPTIAN MACE-HEAD MEASURE OF NARMER

$$1,422,000 \div 3.16 = 450,000 (50,000 \times 9)$$

$$1,422,000 = 360 \times 3950 \rightarrow 1250 (2 \times 25^2) \times 3.16 = 3950$$

$$1,422,000 \div 1250 = 1137.6 = 3.16 \times 360 (\pi \times \text{circumference},$$

where the value of the customary circumference [360°]

transferred to the diameter produces a relative circumference of 1137.6; surrendering a ratio for π : $1137.6/360 = 3.16$)

$$1,422,000 = (360 \times 50) \times 79; \text{ while } 450,000 = (360 \times 50) \times 25;$$

together producing a ratio for π [$79/25 = 3.16$] because

$$1,422,000 = 450,000 \pi [9 \times 50,000 \times \pi]$$

SET MEASURE: VARIABLE CALENDAR MONTH

A revolutionary variable-length calendar measure of alternating 29-day male and 30-day female months.

DAN CALENDAR: 8-YEAR 100-MONTH 2912-DAY

$8 \times 365.2422 = 2921.9376$ days [90 minutes less than 2922 days]
 $100 \text{ months} = (4 \text{ years} \times 12 \text{ months}) + (4 \text{ years} \times 13 \text{ months})$
 $88 \text{ months} \times 29 \text{ days} = 2552 \text{ days}$
 $12 \text{ months} \times 30 \text{ days} = 360 \text{ days}$
 $2912 \text{ days} = 2552 + 360$
requiring the addition of 10 days every 8 years: $2912 + 10 = 2922$
(a measure which proved ineffectual after only a century)⁶

BRAN CALENDAR: 8-YEAR 99-MONTH 2921-DAY

$8 \times 365.2422 = 2921.9376$ days
 $99 \times 29.530588 = 2923.5282$ days
 $99 \text{ months} = (5 \text{ years} \times 12 \text{ months}) + (3 \text{ years} \times 13 \text{ months})^7$
 $49 \text{ months} \times 29 \text{ days} = 1421 \text{ days}$
 $50 \text{ months} \times 30 \text{ days} = 1500 \text{ days}$
 $2921 \text{ days} = 1421 + 1500$
requiring the addition of 1 day every 8 years: $2921 + 1 = 2922$

⁶ EXTENDED APPLICATION of the 100-month 8-year measure exhausted its usefulness in synchronizing lunar and solar cycles after 128 years, because each 8-year cycle *exceeded* the length of 8 solar years by .0625 days or 90 minutes. Meaning that after 16 of the 100-month 8-year cycles, the great-year measure would be an entire day *ahead* of the sun, which would require subtraction to rectify. But intercalation of calendrical measures is confined to adding days to bring a lagging calendar back into step with the celestial cycles (10 days each 100-month cycle). The 99-month variant of the 8-year great-year measure rectified the defect by falling short of 8 solar years .9376 days every cycle (without the intercalated day). Meaning that the single day which was intercalated after each of the first fifteen 8-year cycles could be withheld after the sixteenth 8-year cycle to bring the calendar and solar cycle back into step, once an entire day difference had accumulated.

11-YEAR 136-MONTH 4016-DAY CALENDAR

$11 \times 365.2422 = 4017.6642$
 $136 \times 29.530588 = 4016.1599$ days
 $136 \text{ months} = (7 \text{ years} \times 12 \text{ months}) + (4 \text{ years} \times 13 \text{ months})$
 $64 \text{ months} \times 29 \text{ days} = 1856 \text{ days}$
 $72 \text{ months} \times 30 \text{ days} = 2160 \text{ days}$
 $4016 \text{ days} = 1856 + 2160$
requiring the addition of 1 day every 11 years: $4016 + 1 = 4017$
NOTE eleven years (136 months) + eight years (99 months) = the compound cycle of nineteen years (235 months).

METONIC CALENDAR: 19-YEAR 235-MONTH 6940-DAY

$19 \times 365.2422 = 6939.6018$
 $235 \times 29.530588 = 6939.6882$
 $235 \times 29.531914 = 6940$ [Meton's measure of 432 BC]
 $235 \text{ months} = (12 \text{ years} \times 12 \text{ months}) + (7 \text{ years} \times 13 \text{ months})$
 $110 \text{ months} \times 29 \text{ days} = 3190 \text{ days}$
 $125 \text{ months} \times 30 \text{ days} = 3750 \text{ days}$
 $6940 \text{ days} = 3190 + 3750$

NOTE that the phases of the moon repeat on the same day after 19 years (phase cycle); while the 18.6-year Nodal Regression cycle (course cycle) completes the course the moon takes through the sky during a circuit of the nodal line (*ie*, the nightly track from rise to set – a serpentine sequence of widely variable meanders which recurs every 18.6 years). The Metonic calendar comprises months; the Metonic cycle, lunations. [cf, MAIR, *Aratus*, p205]

⁷ MYTHOLOGICAL FAMILIES [APOLLODORUS I, pp xlv–liv] show a progression from a 100-measure to a 99-measure base: THEOGONY family of the gods Uranus and Ge, beginning with the monstrous 100-handed *Hekatocheiras* and ending with Typhon the giant of the 100 trailing heads [100] DEUCALION the Greek Noah (son of Prometheus) whose line ends with the 100-handed Argonauts [100] INACHUS grandfather of Apis and forebear of 100-eyed Argus; Belus and Agenor; Danaüs and Ægyptus (whose offspring total 100 children, one of which – Lynceus – is spared from eternity in the underworld); and Heracles father of the 67 Heracleidæ, 50 of whom were born to the 49 Thespiads [100 → 99] PELASGUS grandfather to Lycaon's 50 sons [100 → 99] ATLAS son of Iapetus and father of the seven Pleiades ASOPUS father of Pelagon, who sold Cadmus the cow

CALLIPIC CYCLE: 76-YEAR 940-LUNATION 27,759-DAY

29.530851 (27,759 ÷ 940) *average lunation*
four Metonic cycles less a day

HIPPARCHIC CYCLE: 304-YEAR 3760-LUN 111,035-DAY

29.530585 (111,035 ÷ 3760) *average lunation*
four Callipic cycles less a day

LEVITICAL JUBILEE CALENDAR: 49-YEAR CYCLE

When historians include the Jubilee calendar in their reviews of ancient chronometry, they generally restrict their references to the 364-day version described (with no explicit provision for intercalation) in the books of *Enoch & Jubilees* – a variable-month measure contrived so that feast days fall not only on the same date in the year but also on the same day of the week each year. This is because the antecedent from which it is supposed to have derived – the Jubilee calendar presented in the much earlier book of *Leviticus* [xxv: 8–10] – has never been deciphered before now.

And you shall count seven Sabbaths of years for yourself, seven times seven years; and the time of the seven Sabbaths of years shall be to you 49 years. Then you shall cause the trumpet of the Jubilee to sound on the tenth day of the seventh month; on the day of the Atonement you shall make the trumpet to sound throughout all your Land. And you shall consecrate the fiftieth year, and proclaim liberty throughout all the Land to all its inhabitants. It shall be a Jubilee for you; and each of you shall return to his possession, and each of you shall return to his family.

If we entertain the possibility, however, that the *Levitical* priests were implicitly directed by Yahweh to compute his measure on the strict observance of lunations (not months) rationalized to 365-day calendar – rather than actual solar – years, a solution emerges. Implicated cycle intervals include:

A	SOLAR YEAR	365.2422 days
B	CALENDAR YEAR	365 days
C	LUNAR YEAR [LY]	354.36705 days (12 lunations)
D	LUNATION [LN]	29.530588 days
E	7 calendar years	2555 days [7 × 365]
F	49 calendar years	17,885 days [49 × 365]
G	49 solar years	17,896.867 days [49 × 365.2422]
H	50 lunar years	17,718.352 days [600 × 29.530588]
J	50 LY + 6 LN	17,895.536 days [606 × 29.530588]
K	606 months	17,877 days [606 × 29.5]

After 49 calendar years (17,885 days) it becomes evident that only 10 more days are needed to complete 606 lunations, or ‘fifty lunar years plus six lunations’ (17,895.536 days). The addition of this ten-day interval has the effect of extending their 49-year *solar* measure [F] into its fiftieth year (striking a signal harmonic with [H] the fifty elapsed whole lunar years).

Yet an interval *intimating* a lunar intercalation because it was required to fill out the incomplete 606th lunation [J] – thereby lending to its supplementary identification as a seventh ‘month’ beyond those 50 lunar years.

It makes up the difference between their 49-year solar [F], and ‘50-lunar-year-6-lunation’ [J] cycles – the phantom 7th ‘month’ implicating a measure involving 6 ‘months’ [K].

In other words, the 10-day intercalation may be taken as part of the 50th year when protracted from the solar cycle of 49 calendar years [F], and as part of a 7th month when associated with their corresponding lunar cycle of ‘50 lunar years plus 6 lunations’ [J].

Thus the 10th day of the 7th month completes the Atonement (an *adjustment*) comprising a solar extension – a *consecrated 50th ‘year’ extending only 10 days* – required to realign their solar calendar [F] with [J] the lunar cycle (the end of their 49th calendar year coming 10 days before the end of the 606th lunation).

After the intercalation of the 10-day 50th ‘year’ a new Jubilee cycle begins: the 607th lunation following directly on the heels of the 606th; while the next 49-year calendar cycle must be delayed ten days – *proclaimed a liberty* – before succeeding its predecessor.

G	49 solar years	17,896.867 days
J	606 lunations	17,895.536 days
F	49 calendar years	17,885 days [+ 10 = 17,895]
K	606 months	17,877 days [+ 18 = 17,895]

The *Levitical* Jubilee calendar cycle – computed as 606 lunations [J] – equals 49 calendar years of 365 days plus a ‘fiftieth year’ lasting only 10 days [F]; the solar, lunar and calendar cycles ‘converging’ at lunation 606 [J] and month 607 day 18 [K] masquerading as day 10 ‘year’ 50 [F].

NOTE “Calendars, or writings that presuppose them, comprise a very substantial percentage of the Dead Sea caches. Indeed...adherence to a particular calendar is the thread that runs through hundreds of the Dead Sea Scrolls. More than any other single element, the calendar binds these works together. It is the calendar that makes the scrolls a collection. The calendar is the intentional element.”

[ABEGG, *The Dead Sea Scrolls*, p380]

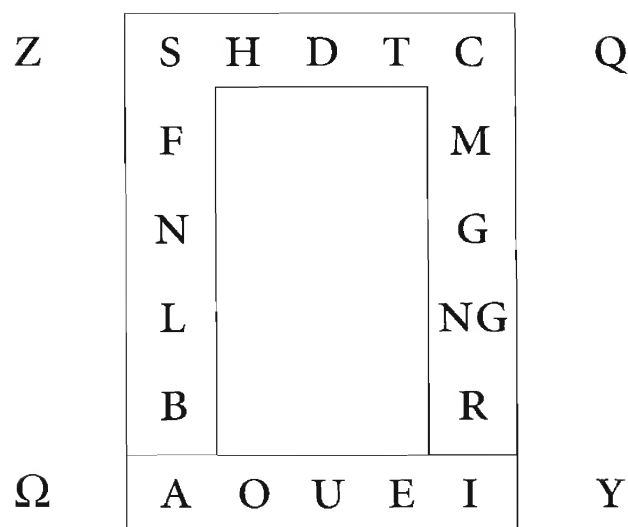


FIG XIV BOIBEL-LOTH CALENDAR

Beth-Luis-Nion alphabet elaborated in a figurative 'trilithon' as the Boibel-Loth calendar, comprising 13 months of 28 days [$13 \times 28 = 364$ + a single intercalary day of invisible vowels] – the cornerstones as 'resting-places' configuring doubled counts (13 letters projecting 22): SS = Z; CC = Q; II = Y; AA = Ω (*omega* – larger O – signifying the completed cycle, where *omicron* or smaller o represents full moon) – while the vowels submerged beneath the ground were intoned together (five as one) on the terminal day of the year: IEUOA = YHWH or JEHOVAH [GRAVES, *The White Goddess*, p270]

BOIBEL-LOTH CALENDAR

THE UNSPEAKABLE NAME of Yahweh – composed of *five vowels* in Greek: IEUOA – was intoned but *once* a year, by the High Priest on the Day of Judgement – the solitary intercalary day at the end of the improved 364-day variable-month year, which replaced the five intercalary days⁸ of the antecedent Egyptian Bel-measure year of 360 days. The name of god secreted in the sanctuary of the Temple, invoked Yahweh on the one day the subterranean vowels of the Beth-Luis-Nion alphabet came into play in the plan of the Boibel-Loth calendar.

A calendrical mnemonic ingeniously constructed to begin and end on the submerged letter A – which figures the first night of the new lunation when no phase is visible in the sky (the moon apparently submerged in the underworld). A cyclical figure pivoting the divine epithet '*alpha* and *omega*'⁹ where *alpha* underscores the initial dark night, and *omega*, the completed lunation on the terminal, or polar, dark night of the cycle. In other words, an *annual* circuit of thirteen months, which further incorporates the *monthly* presentiment of two dark nights, configured to reside with the vowels in the underworld (representing the yearly day of increase, or sole intercalation of the 364-day calendar). It bears noting also that the seven subterranean vowels in the figure, *shadow* the seven focal phases of a lunation – seven aspects of the goddess as *mates* for the seven spectres.

8 five intercalary days – known as the *Epact* – consecrated to the five children of Nut: Set, Osiris, Isis, Nephthys and Horus the Elder (united in association with the underworld). The solitary intercalary day appended to the 364-day calendar was likewise consecrated to a god, the singular deity – YHWH – of a new disposition which has come to be known as Monotheism, merely because it reduced the need for protracted adjustment of the calendar from five days to one (from five gods to one).

NOTE *ia* is the number 'five' in Sumerian

9 "[the] great voice from the Throne [declaring] I am the Alpha and the Omega, the Beginning and the End" [REVELATION XXI: 6]

ANCIENT COMPUTATIONS OF THE MEAN LUNATION

29.550339 ('25-year' 309-lunation 9125-day) [+ 28 mins 26 secs]
 29.537572 ('70-year' 865-month 25,550-day) [+ 10 minutes]
 29.531914 (19-year 235-month 6940-day) *Meton* 432 BC [+ 2']
 29.530851 (76-year 940-lunation 27,759-day) [+ 22.7 seconds]
Callipus 330 BC

29.530588 days per lunation **MODERN SYNODIC MEAN**

Hipparchus 150 BC

29.530585 (304-year 3760-lunation 111,035-day) [− ¼ second]
 29.530434 ('18.6-year' 230-lunation 6792-day) [− 13 seconds]
 29.530434 ('56-year' 690-lunation 20,376-day) [− 13 seconds]
 29.529411 (11-year 136-month 4016-day) [− 1 minute 42 seconds]
 29.50505 (8-year 99-month 2921-day) [− 36 minutes 47 seconds]
 29.12 (8-year 100-month 2912-day) [− 9 hours 51 minutes]

NOTE because a lunation or lunar cycle (29.530588 days) doesn't divide evenly into a year or solar cycle (365.2422 days) ancient astronomer-priests computed calendrical cycles which would allow them to rationalize as near as possible, a compound of years with a number of whole lunations. How close to the length of a lunation these various cycle measures came, is shown to the right. The Egyptian priestly 25-year lunar calendar – which effectively rationalized 309 celestial lunations (9124.9516) with 25 calendar years of 365 days (9125 days) – failed miserably (as evidenced by the average length of 309 lunations in 25 solar years: 29.550339 days) to synchronize the actual lunar and solar cycles.

365.2422 days ÷ 29.530588 days = 12.368267 months (*lunisolar*)

12 lunations × 29.530588 days = 354.36705 days (*lunar year*)

12 months × 29.5 days = 354 days *lunar year (rounded)*

24 hours × 29.530588 days = 708.73411 hours per lunation

24 hours × 29.5 days = 708 hours (*average lunation*)

ANOMALISTIC MONTH *perigee to perigee* 27.55455 days

DRACONIC MONTH *node to node* 27.21222 days

SIDEREAL MONTH *fixed star to fixed star* 27.32166 days

TROPICAL MONTH *equinox to equinox* 27.32159 days

SYNODIC MONTH *full moon to full moon* 29.530588 days

YEARS MONTHS DAYS CENSUS

	½	15	
	1	29.5	
	1	30	
1	12 (29.5)	354	
1	12 (30)	360	
1	12.368267 (29.530588)	365.2422	
8 (364)	100	2912	
8 [365.125]	99	2921	
11 (365)	136	4016	
18.6 [365]	230	6792	
19 [365.25]	235	6940	
			8580
25 (365)	309	9125	
40 (365)	494	14,600	⌘
50 (365)	618	18,250	
56 [365]	690	20,376	
			22,000
			22,273
			23,000
			24,000
70 (365)	865	25,550	
76 [365.25]	940	27,759	
304 [365.24671]	3760	111,035	
350 (365)	4326	127,750	
430 (365)	5315	156,950	⌘
470 (365)	5809	171,550	⌘
500 (365)	6180	182,500	
1461 (365)	18,058	533,265	
			601,730
			603,550
1767 [365.24221]	21,855	645,383	
3950 (360)	48,822	1,422,000	
21,000 (relative precession cycle)			
25,800 (precession of equinoxes: clockwise)			
10,000 (precession of perihelion: counter-clockwise)			
⌘ signifies Israelite bondage and wilderness measures]			

EARLY GREEK ALPHABETS - 8th. - 7th. CENT. B.C.								
	ATHENS	Thera	Crete		Naxos	Corcyra		Boeotia
1	Α	ΑΑΑ	Α	Α Α Α	Α Α	ΑΑΑ	Α Α Α	Α Α
2			Α	Α Α	Α		Α	
3		Α	Α	Α	Α	Α	Α	Α
4		Α	Α	Α	Α	Α	Α	Α
5	Β	Β	Β	Β	Β	Β	Β	Β
6								
7	Γ		Γ	Γ	Γ	Γ	Γ	Γ
8	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
9								
10	Ε	Ε	Ε	Ε	Ε	Ε	Ε	Ε
11	Ζ	Ζ	Ζ	Ζ	Ζ	Ζ	Ζ	Ζ
12	Η	Η	Η	Η	Η	Η	Η	Η
13	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ
14	Ι	Ι	Ι	Ι	Ι	Ι	Ι	Ι
15	Κ	Κ	Κ	Κ	Κ	Κ	Κ	Κ
16	Λ	Λ	Λ	Λ	Λ	Λ	Λ	Λ
17	Μ	Μ	Μ	Μ	Μ	Μ	Μ	Μ
18	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν
19	Ξ	Ξ	Ξ	Ξ	Ξ	Ξ	Ξ	Ξ
20	Ο	Ο	Ο	Ο	Ο	Ο	Ο	Ο
21	Π	Π	Π	Π	Π	Π	Π	Π
22	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ
23	Σ	Σ	Σ	Σ	Σ	Σ	Σ	Σ
24	Τ	Τ	Τ	Τ	Τ	Τ	Τ	Τ

CONVERGENCES

FIG XV EARLY HELLENIC LETTER FORMS
[DIRINGER, *The Alphabet* VOLUME II, p302]

TIMELINE	EGYPT	GREECE	8-YR	19-YR
904		OCTÆTERIS	100-MTH	
776		OLYMPIAD	99-MTH	
776		ALPHABET		
747–687		3 CATAclysms		
685–490		TYRANNY		
670–654	ASSYRIAN RULE			
615	THALES	PHILOSOPHY		
547–525	PYTHAGORAS			
530		BABYLONIA		
525–332	PERSIAN RULE			
513		SEMICIRCLE OF PYTHAGORAS		
460–455	HERODOTUS			
432		METON		GREECE
369				PERSIA
332–31	MACEDONIAN RULE			
330	CALLIPUS: 76-YR CALENDAR			
312				SELEUCIA
238	CANOPUS DECREE OF PTOLEMY III ¹⁰			
TIMELINE	ISRÆL			
597–532	BABYLONIAN EXILE			
597–369	BABYLONIAN CALENDAR IN USE ¹¹			
369–167	PERSIAN & SELEUCID 19-YR CALENDAR			
207–187	LEVITICAL 49-YR CALENDAR A MYSTERY			
198	SELEUCID RULE OF PALESTINE			
187–167	ESSENIC REVISION OF THE 49-YR CALENDAR			
180	BOOK OF JESUS BEN SIRACH: 49-YR CALENDAR			
167	ANTIOCHUS IV EPIPHANES OUTLAWS JUDAISM			
167–163	MACCABEAN REVOLT			
165–105	BOOK OF ENOCH			
160–140	BOOK OF JUBILEES: 49-YR CALENDAR			

THE TIMELINES present a *conventional* progression of calendrical innovations during the first millennium BC. Yet the evidence indicates that civic adoptions lagged behind the astronomical or priestly innovations.¹² For example, the 19-year Jewish calendar in use today – with “the first and thirtieth days being called new-moon” – was adopted officially by Hillel II (303–65 AD) around 359 AD,¹³ some 760 years after its recorded introduction into Greece, and more than 80 years after its adoption as a Church calendar.

The fact to bear in mind, however, is that with each new calendrical computation came the concomitant increase in comprehension of the lunar cycle. The introduction of the Metonic measure in 432 BC points to the discovery of the length of the phase cycle, which I contend occurred some time earlier in Egypt (arguably during the 22-year period when Pythagoras studied in the *adyta* of Egyptian temples: 547–525 BC).

The seven great stone pyramids¹⁴ were erected, in my view, to sight fixed points in the sky over a very long time, in the hope of delimiting the interval between the occurrence of the same lunar phase at the same place in the sky on the same solar date – an insight which eluded everyone prior to the publication of Ernest Brown’s *Tables* in 1919!

¹⁰ “The Greek documents of Ptolemaic Egypt offer numerous equations between the Macedonian and the Egyptian dates... The evidence shows that until c. 240 the Macedonian months agreed with the moon. It appears that the calendar was regulated by the Egyptian 25-year cycle. As in the old Macedonian calendar, an intercalary month was inserted every other year, though the cycle required only nine intercalations (1309 [sic – ie, 309] lunar months = 25 Egyptian years = 9125 days).” [BICKERMAN, *Chronology of the Ancient World*, p30]

¹¹ “The pre-Babylonian time reckoning of the Hebrews is virtually unknown. It is certain that the calendar was lunisolar.” [BICKERMAN, *op cit*, p24]

¹² “As late as the middle of the third century AD the rather primitive *octaeteris* was normal for the Greeks and the Jews (cf, Africanus, *ap. Hieron. ad Daniel.* 9, 24–7: PL xxv, 524). The same cycle had been also the basis for the Easter computation of the Alexandrian church (Eus. *H. E.* vii, 20) until c. 277 when the 19-year period was adopted. Accepted by Rome in 525, the latter has remained in force until today for calculation of Easter dates (cf, Ed. Schwartz, *ZNTW* 1906, 64).” [BICKERMAN, *op cit*, p38]

¹³ ENCYCLOPEDIA AMERICANA VOL XVI, p59

¹⁴ PARRY, *Engineering the Pyramids*, pp3/4

THE HISTORY OF CALENDRIAL INNOVATION, as I contend, underlies the cryptic narratives of antiquity. In other words, the recognized conflicts of ancient history were essentially disputes over calendar measure.

The legendary struggle between Uruk and Kish, referred to in the *Epic of Gilgamesh*, involved opposing Sumerian conventions: the Kish year comprising 24 half-months of 15 days each (her regnal intervals divisible by 24); while the Uruk interval of Gilgamesh involved whole calendar years.

The departure from Sumerian measures occasioned by Sargon founder of the Akkadian Empire, and his grandson Nārām-Sin, extended the grasp of lunar mechanics to the protracted measure of three Great Years – a 70-year Solar cycle; a 56-year Nodal Regression lunar round; and a 25-year Lunar cycle – which spread with his empire into Egypt, Palestine and Greece.

A few centuries later the Hyksos arrived in Egypt with a radical new measure: the first lunisolar calendar, employing months of variable lengths (29-day male months followed by 30-day female months). But the Egyptians, devoted to the extraction of the true intervals of lunar transit – having erected seven megalithic stone pyramids to detect *phase* recurrence – resisted and ultimately repelled their advance.

The retreat of the Hyksos to Palestine and ultimately to points further west, settled the new measure among Greek and Hebrew ancestors, where the variable-length year of their eight-year Great Year cycle displaced the prevailing Akkadian/Egyptian 360-day year of twelve 30-day months.

But after 128 years the 100-month variant of the 8-year calendar proved defective, prompting the innovation of an improved 99-month alternative.

THE TROJAN WAR describes a conflict between opposing forces of the 8-year measure: the Trojans defending the ineffectual 100-month tradition against the advance of the Achæan proselytes of the 99-month refinement.

The conflict *lingered* for ‘nine years’ before being resolved – the 100-month calendar requiring ten intercalary days; the 99-month, but one.¹⁵ Epeius – the water-bearer of the

House of Atreus (father of Agamemnon and Menelaus) – who constructed the Wooden Horse, contributed “30 ships from the *Cyclades* to [the siege of] Troy”¹⁶ (alluding to a *cycle* of thirty days: *ie*, lunation). While the number of men secreted in the Horse varies in different versions of the tale – from 23, 30, and 50, to 3000.¹⁷

Dedicated to the Greek goddess Athena, the Horse was ultimately squeezed through the gates into the city, where Helen, circling it three times, “teased the hidden Greeks by imitating the voice of each of their wives in turn”. Then, after the Trojans were asleep, “at midnight, just before the full moon rose – the seventh of the year...” the trap-door was sprung releasing the Horse’s awful secret. “Echion, son of Portheus, leaping out first, fell and broke his neck...”¹⁸

The trap-door in the Wooden Horse was “fitted into one flank [with] large letters cut on the other which consecrated it to Athene”.¹⁹ The 50 warriors who emerged, according to the version of Apollodorus, thus countered ‘doubles’ on the other flank, composed of letters (the alphabet drawn from lunar phases). While the death of Echion reduced the sum of ‘100 lunation representatives’ to 99 – epitomizing the victorious 8-year measure of 99 months.²⁰

15 $8 \times 365.2422 = 2921.9376$ (the 100-month calendar comprising 2912 days; the 99-month, 2921) – in other words, both calendars would converge with eight actual solar cycles on ‘the tenth day following the completion of the 100-month cycle’ (*ie*, day 2922)

16 GRAVES, *The Greek Myths*, p693

17 “Into this horse Ulysses persuaded 50 (or, according to the author of the *Little Iliad*, three thousand) of the doughtiest to enter [footnote: According to Tzetzes the number of men who entered into the Wooden Horse was twenty-three, and he gives the names of them all (*Posthomericæ*, 641–650). Quintus Smyrnæus gives the names of thirty, and he says that there were more of them (*Posthomericæ*, xii. 314–335).]” [APOLLODORUS, *Epitome* v: 14, VOL 11, p231]

18 *Portheus* signifying “door of the god” – the cavity accommodating ‘an aggregate of lunar spectres’ [GRAVES, *op cit*, pp693–6]

19 GRAVES, *op cit*, p693

20 $23 - 1 = 22$ (the number of letters in the Hebrew alphabet); $30 - 1 = 29$; $60 - 1 = 59$ (the variable-month measure); $3000 = 30 \times 100$ (or 100 generic months) $\rightarrow 100 - 1 = 99$

The 50 men in the Horse were further countered by the 50 sons of Priam²¹ king of Troy – all of whom died in the war – Hector leader of the Trojan forces (perishing last), being referred to notably as “horse-taming Hector”. The 50 departed Trojans signify ‘dead’ months, equatable with the 30-day, or female, lunation perceived to reside in the realm of the goddess – the underworld – the improved Dan ‘great year’ (the Bran measure) including fifty 30-day months; while the 49 prevailing Achæans represent the aggregate of opposed 29-day or male months completing the 8-year cycle.

The Horse, of course, represents the 8-year Dan ‘great year’ – hearkening back to the wooden bull of Mycerinus which epitomized the 25-year Apis ‘great year’. As Zeus abducted Europa so Paris defiled Helen – the lunar goddess²² circling the Horse three times before its cargo of phases was disgorged, in a mime of the sun rising three times during the dark interlude before the waxing crescent of a new lunation appears. The voices she imitated identify the wives of the secreted spectres as aspects of herself – each visible phase of the cycle mated in the underworld²³ to a different ‘face’ of the goddess.

In this respect Helen recollects the confederate aspects of the Seven Hathors as serial insinuations of the underworld goddess, each mated to her conjugate spectre of the visible lunation – each giving birth to her succeeding phase.

21 “Fifty I had, when the sons of the Achæans came; nineteen were born to me of the same womb, and the others women of the palace bore.” [HOMER, *Iliad* XXIV: 495, VOL II, p599]

22 Helen signifying “moon, or basket used for offerings to the Moon-goddess” [GRAVES, *The Greek Myths*, p763]
NOTE ALSO that her brothers Castor and Pollux (Polydeuces) – known as the Dioscuri, or children of Zeus – were destined to “spend alternate days in Heaven and Hades”, a reference to twin full moons, the first of which descends into the underworld while his double assumes their seat on high [HARVEY, *Oxford Companion to Classical Literature*, p148]
NOTE FURTHER that ‘Agamemnon’ connotes “moon-diviner”; and ‘Menelaus’ projects “moon servant” – *ie*, “lunar priest”

23 the goddess, in *all* her guises, *out of view*: the moon’s daytime ‘spectre’ thereby figured as a complicit ‘a-spect’

THE BIBLE also preserves accounts of the conflict between these two measures – the most striking being the struggle between Saul and David (Saul representing the 100-month and David the 99-month 8-year calendar).

“David was 30 years old when he became king, and he reigned for 40 years. He reigned in Hebron over Judah for 7 years and 6 months; then he reigned in Jerusalem over all Israel and Judah for 33 years.” [II SAMUEL V: 4/5]

The discrepancy in the duration of David’s reigns (40 years 6 months) and their total (40 years) is readily resolved in a context of disparate calendrical measures, by reducing the sums to an equivalent number of months (noting that the 99-month 8-year cycle comprised five 12-month and three 13-month ‘years’).

Let David’s first reign (7 years 6 months) comprise five 12-month [60] and two 13-month [26] ‘years’ in addition to the 6 odd months, for a total of 92 months [60 + 26 + 6]; while his successive reign of 33 years may be broken into four 99-month cycles [4 × 99 = 396] plus an extra 12-month ‘year’, for a total of 408 months [396 + 12 = 408] – the two sums combining to produce a grand total of 500 months [92 + 408 = 500].

Which equals the number of months in a 40-year reign when computed as five of the ineffectual 100-month 8-year cycles [40 = 8 × 5; 5 × 100 = 500]: *ie*, the same number of months, but a more *enduring* reign (given the inherent problem, after 128 years, with Saul’s inferior measure).

David, in other words, embodies the key to a calendrical complication involving two disparate measures – the text drawing attention to the greater durability of the younger *anointed* refinement, with the conspicuous incongruity of these contiguous sums. David, God’s *anointed* king (being the youngest of *eight* sons of Jesse of Judah), having displaced the people’s king Saul, scion of Kish (identified as an outmoded measure through association with Kish).

Biblical myth presents a prodigious lexicon of similar lunar allusions. Back to *Gilgamesh* we hear of the Deluge which lasted – in the original – seven days and seven nights (*ie*, waters which consumed all seven of the focal lunar

Spectres, day and night). A clear reference to the interval of two dark nights between visible lunations when no phase of the moon appears in the sky.

Two of every animal were taken aboard to emphasize the two dark nights between visible phases – when the new lunation was considered to have been *conceived* in her watery realm by the goddess in *conjunction* with the submerged spectre of the phallic waning crescent.

Noah was the only one to attain immortality in the *Epic of Gilgamesh* because he embodied the complete lunation which repeatedly resumes its place on high following two turbulent nights at sea.

The rib of Adam refers to the extra day of the female or Even month – day 30 of the 30-day month, which harbours the phase of waning crescent, shaped just like a rib.

Trees were ideal symbols of lunar cycle, their branches as courses and leaves as phases. The Tree of the Knowledge of Good and Evil in the Garden of Eden refers to the absence of the moon from the sky during those two nights between visible phases of the lunation: *good* (cognate with *God*) in the appearance of the moon on high; *evil* (as in the *fall of Satan*) in its disappearance. The Tree of *Eternal Life* refers to the complex measures governing the perpetual cycle (involving calendar adjustments over *extended* periods).

Interpreting the narratives of the patriarchs in this light explains too many details for coincidence. Abram leaves Ur with 318 others ($319 = 11 \times 29$); the initial 100-month 8-year calendar comprising eleven 29-day months and one-and-a-half 30-day months ($1\frac{1}{2} \times 30 = 45$) or 364 days ($319 + 45$). At 99, after learning from God that he will be blessed with the greatest of sons, Abram changes both his and his wife's names, adding the eighth letter 'h' or *heth* to make *Sarai* 'Sarah' and *Abram* 'Abraham'. Which alludes to a Chosen Measure – the miraculous birth of Israel (through Isaac) having 'delivered' the new 8-year 99-month variant of the variable-month calendar.

A revolutionary new singular measure – the first lunisolar calendar on record – which replaced the 5 intercalary gods of the Egyptian *Epact* with a solitary intercalary amalgam:

YHWH whose name – derived from the Sumerian word for the number 'five' (*ia*) – was uttered but once a year in the Temple by the High Priest (*ie*, on Intercalary Day).

The Chosen People (or People of the Chosen Measure) depart Egypt for the Promised Land – where the workings of God's heavens are better understood. Moses conducts a census at Yahweh's command: 601,730 'males over twenty' crossing Jordan out of the wilderness into Canaan (with the two maternally-related tribes of Benjamin and Judah totalling 122,100). Following the Assyrian conquest of the ten northern tribes of Israel, those of Benjamin and Judah are all that remain of the followers of Yahweh – sole heirs to the divine(d) word of God (his superior measure).²⁴

$601,730 \div 122,100 = 4.9281736282$; a figure which, when multiplied by the length of the Judæan year (365.25), gives a product of 1800 days. *Coincidence?* The sum 1800 also just happens to be the product of 5×360 ; and 360 is also 'coincidentally' the number of days in the retired Egyptian and Babylonian year.

In other words, the *surviving* Judæan measure proves a tremendous improvement over its Egyptian antecedent: 4.9281736282 improved Judæan years of 365.25 days equal five Egyptian years of 360 days – which further demand an annual intercalation of five additional days (yet *still* lag behind the sun...).

The Israelite 99-month calendar of eight variable-length years was hereby fortified with the Judæan mean solar year of 365.25 days, to substantiate their claim of calendrical supremacy over foreign computations for all eternity.

Hebrew knowledge of God in his Heaven – the moon and its movements – observed greater fidelities over extended intervals than had ever previously been captured.

Until, that is, the introduction of the 19-year 235-lunation Metonic measure (432 BC) adapted later (359 AD) as the festal calendar of Judaism – with the interval of the lunation (or Molad) computed at 29 days, 12 hours and 793 parts.

24 the first kings of the Judæan Monarchy – Saul and David – were scions of BENJAMIN (Kish) and JUDAH (Jesse) respectively

THE GREATEST PROBLEM with the present thesis remains the consensus among historians and anthropologists that numerous ancient narratives are conspicuous solar myths.

Because the classical Greeks interpreted ancient myths in this way – reckoning Ra and Zeus as sun gods – historians since, have apparently felt an obligation to perpetuate the impression. With nothing better to go on but the ancient texts, they readily defer to ‘authorities’ nearer to the event, considering themselves far too remote from the idioms and customs of the day to render sounder judgement.

Consequently the solar focus in early analysis of ancient mythology obscured the *greater* significance of the moon in antiquity, until relatively recently.

Analysts – especially psychoanalysts – have followed the publication of *The White Goddess* by Robert Graves (1948) and *The Roots of Civilization* by Alexander Marshack (1972) with interpretations of lunar lore, emphasizing recovery of a lost convocation they call the Goddess Tradition: an epoch when men and women were arguably more compatible and lived in greater harmony with mother nature.

Yet none of them have bothered to digest the mechanics of lunar cycle for the insight it might lend to their postulate. Apart from realizing that there are only seven recognizable phases in a lunation (which conveniently accord with the Seven Hathors and seven focal gods – not to mention the recurrence of the number ‘seven’ throughout *Gilgamesh*), they ignore the fact that there are two apparent full moons every ‘month’. Or, more enigmatically, that waxing crescent appears to rise in the west while waning crescent goes out incomprehensibly in the east.

Thus, in her section ‘The ‘Solarization’ of the Moon’, Jules Cashford is helpless in the face of a description of Marduk from the Babylonian epic *Enuma Elish*, which ascribes him “four eyes and as many ears” – clearly the attributes of two individuals [*The Moon*, pp157/8].

She characterizes the tale as “the key text for the conquest of the Earth and Moon goddess by the Sun and Storm god [Marduk]” drawing the conclusion that the “matriarchal, lunar-oriented goddess culture of the Sumerians had now

to adapt to the new patriarchal, solar-oriented god culture of the Semitic Babylonians” [*op cit*, p157].

Marduk as the apotheosis of lunar cycle – full moon, the brightest, most resplendent of phases – dispatches Tiamat to exile in the underworld, however, not because the lunar goddess has been displaced but because that had always *been* her place (the goddess never visible). Her division in two is merely the reflection of his bisection of the cycle at its peak: two nights of darkness mirroring twin full moons cleaving the lunation into waxing and waning arcs. Thus the duplex titulary: Mar-Duk – as with Amon-Ra in Egypt (and Apollo / Zeus in Greece). [*see* p20]

Cashford identifies the introduction of her sun cult with the revolution of Sargon of Akkad, which she dates about 2350 B.C. Yet she admits that in “Egypt, Osiris and Isis never entirely gave way to the later sovereignty of the Sun god Re, for even when the priests came to follow the Sun, the folk [she claims] continued to follow the Moon [citing Cumont]” – attempting to reconcile the enigmatic regency of disparate Egyptian gods at apparently different times during the same historical period [*op cit*, p156].

Her description of a ceiling painting of Nut at Dendera sustains the expansion: “Nut, the sky goddess, giving birth to the Sun god, whose [nine] rays illuminate the face of cow-eared Hathor, here pictured as the horizon between two hills.” She explains:

“In the Heliopolitan creation myth, Nut was the sky goddess who arched her star-spangled body over her husband Geb, the Earth, resting her feet on the eastern horizon and brushing the west with the tips of her fingers. The Sun was her son, slipping inside her body at night, travelling from west to east to be born from her womb at dawn. This is one of the earliest images of the ‘son-lover.’” [CASHFORD, *The Moon*, p156]

The nine rays, however, identify the disk at Nut’s belly as the symbol of lunation, which gives birth to nine Regents: the seven focal Spectres and the two invisible Aspects. She faces left because the cycle proceeds from the waxing form of the crescent (right arm curved) to its inverse (on the left). Hathor is shown in the underworld where she resides.

It's not that authorities such as Cashford have dismissed my lunar hypothesis – it has never occurred to them. They haven't been taught *how* to read the ancient texts in a lunar light, thus remain oblivious to the fidelity of the ensuing insights which the myths were conceived to relinquish.

History surrenders many mysteries and much garbling – which however tend to persist *without* lunar reflection. History *was* mistaken, the mythologization of the ancient iconography proves to have been merely an elaboration (of the modern era: *ie*, from classical Greece to the present). The scriptures of antiquity were conceived to enshrine and preserve *natural* phenomena, by allusion – the key to their comprehension merely the knowledge of lunar mechanics.

This insight appears to have been lost during the period between the Heroic and Classical Greek Ages – arguably because of cataclysms which devastated the Mediterranean from 747–687 BC.

Only those who had devoted themselves to the study of the goddess would prove fluent in the iconography of the texts. Wars had been fought over divergent interpretations of lunar measure – the sacred (*ie*, secret) scripture potentially fatal in the wrong hands.

From the parietal 'texts' of Lascaux to the *computational* secretions in the Bible, the key insights remained covert – the confraternity of lunar initiates alone inclined to their decipherment. Thus scholars such as Bickerman find little evidence of the systematic application of calendars like the Metonic measure – its progress proving alone the purview of the colleges of lunar initiation (evidenced earlier in the 25-year priestly lunar calendar of Egypt).

Surely a thesis which claims to pare away the spiritual ornament of so-called religious scriptures to expose the *basis* for belief in the three great monotheisms as nothing more than the theophany of an intercalary day in an extended-measure calendar, deserves sober consideration. Especially if it were to prove true...

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